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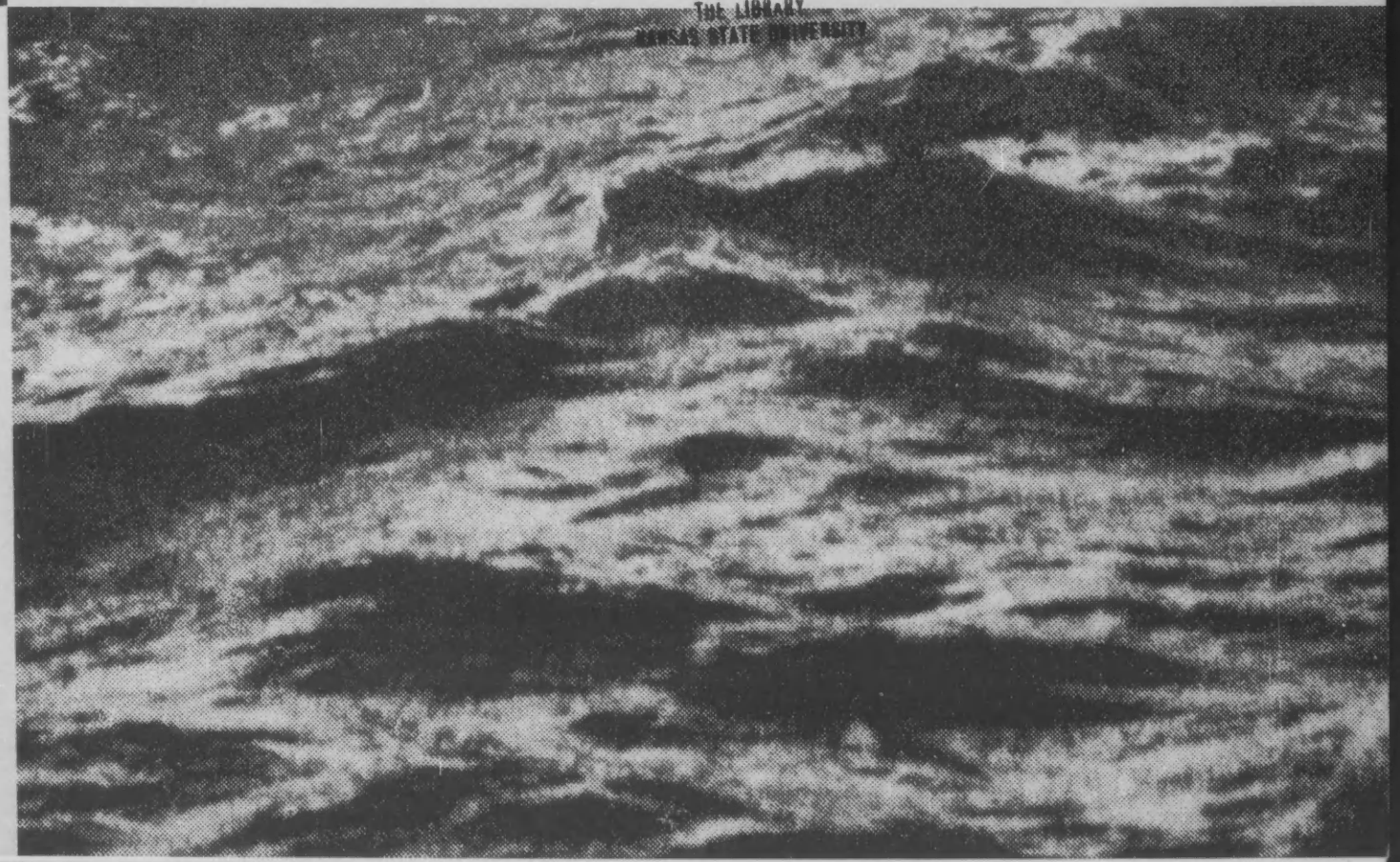

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UNITED STATES DEPARTMENT OF COMMERCE
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Frank T. Piskur
Editor

0.322 (9.11) RACEMIZATION OF AMINO ACIDS IN MARINE SEDIMENTS

Wehmiller, John (Lamont-Doherty Geological Observatory, Columbia University, Palisades, N.Y. 10964), and P. E. Hare (Geophysical Laboratory, Carnegie Institution, Washington, D.C. 20008)
Science 173, No. 4000, 907-911 (September 3, 1971)

Biological amino acids are primarily of the L form. The conversion of these enantiomorphs, with time, to an equilibrium mixture of D and L forms has been observed in a number of sediments and fossil organisms, several investigators noting that the racemization process advances as the age of the material increases. In 1969, two of these investigators (Hare and Mitterer) found that the isoleucine in a deep-sea core from the Antarctic became increasingly racemic with depth. When they compared their data on the rate of racemization of isoleucine with the sedimentation rates determined from paleomagnetic data, they found that these rates and those extrapolated from high-temperature pyrolysis data on actual shell material agreed well. The following year, Bada et al. found that the ratio of alloisoleucine to isoleucine in a core from the Mid-Atlantic Ridge increased with depth. Using high-temperature pyrolysis experiments on solutions of free L-isoleucine, they calculated a sedimentation rate of 0.42 cm./1,000 yr. for this core.

Since isoleucine is one of the slowest amino acids to racemize, the present authors assume that it can serve as an index of the degree of racemization of other amino acids in a sample. Using a series of cores of deep-ocean sediments of known age, they analyzed the kinetics of racemization. They found that a large number of variables affect the apparent rate of the process--temperature, contamination, time, diagenetic reactions, water content, and recovery techniques, for

 (over)

0.38 (1.92) A COMPARATIVE INVESTIGATION OF THE TISSUE PROTEINASES FROM THE LIVER OF VARIOUS SPECIES OF VERTEBRATES INCLUDING MAN

Kazakova, O. V., V. N. Orekhovich, and K. F. Firfarova (Institute of Biological and Medical Chemistry, Academy of Sciences of the USSR, Moscow, U.S.S.R.)
Biochemistry 35, No. 4, Part 1, 634-640 (July-August 1970) [Biokhimiya 35, No. 4, 721-727 (July-August 1970)]

Cathepsins with a maximum activity at pH 3 were isolated from the livers of two ovipara (pike and hen) and four mammals (rat, pig, ox, and man). Cathepsins from ovipara livers had molecular weights in the order of 150,000; those from the mammals ranged from 40,000 to 70,000. The photodynamic action of methylene blue almost completely suppressed the activity of the enzymes. Diazoacetyl-DNP-ethylenediamine did completely inactivate the cathepsin of pike liver; it caused an approximate 50% loss of activity by the enzymes of the hen and the man; it did not affect the cathepsin of pig liver. Pike-liver cathepsins were somewhat different from the others in that they split the highest number of bonds in the B-chain of insulin and had a decided similarity to pepsin, both in the positions of the histidine-containing peptides (on the peptide maps) and in their suppression by the pepsin inhibitor (diazoacetyl-DNP-ethylenediamine). Moreover they rapidly hydrolyzed carbobenzoxy-glu-tyr (as did the liver cathepsin of the hen).
[6 figures, 2 tables, 16 references] LB

0.34 (7,599) THE CONVERSION OF 2,4-DINITROPHENYLHYDRAZINE DERIVATIVES OF MONOCARBONYLS TO ETHYLENETHIOACETALS AND ETHYLENETHIOKETALS FOR ANALYSIS BY GAS LIQUID CHROMATOGRAPHY

Metwally, M. M. E., C. H. Amundson, and T. Richardson (Department of Food Science, University of Wisconsin, Madison, Wis. 53706)
Journal of the American Oil Chemists' Society 48, No. 4, 149-154 (April 1971)

A method for the subject conversion was developed. It depends on heating the 2,4-dinitrophenylhydrazones and 1,2-ethanedithiol either with boron fluoride ethyl ether at 125° C. for 12 min. or with p-toluenesulfonic acid at 200° C. for 15 min.; extracting the reaction with pentane; evaporating the pentane; dissolving the residue in o-xylene, and injecting portions of it into the gas-liquid chromatograph. With the method, the yield from long-chain 2,4-dinitrophenylhydrazones will be in excess of 90%; that from short-chain ones, about 80%. The carbon, hydrogen, and sulfur content, the boiling and melting points, and the retention times on FFAP and SE-30 columns are shown for eight synthesized standard ethylenethioacetals and ethylenethioketals.

This article has been issued as Sea Grant Reprint WIS-SG-71-316.
[7 figures, 3 tables, 13 references] LB

0.38 ACTION MECHANISM OF FISH GASTRIC HYALURONIDASE

Kitamikado, Manabu, and Hiroshi Yamamoto (Laboratory of Fishery Technology, Faculty of Agriculture, Kyushu University, Fukuoka, Japan)
Bulletin of the Japanese Society of Scientific Fisheries 36, No. 4, 385-390 (April 1970)
In Contributions From the Department of Fisheries and the Fishery Research Laboratory, Kyushu University, No. 16 (1970)

In 1969, the authors reported that they had found strong hyaluronidase activity in the stomach of fish. They believe that report is the first made of the existence of this enzyme in animal digestive organs. In the present report, they analyze the products of hyaluronidase reaction in mackerel (Scomber japonicus) to determine the action mechanism of the enzyme.

Purified hyaluronidase extracted from mackerel gastric mucosa was completely free of β-glucuronidase. The principal reaction products were a series of even-numbered oligosaccharides having an N-acetylhexosamine end group. The chromatographic behavior of these oligosaccharides was similar to that of the products of bovine testicular hyaluronidase; they did not exhibit any characteristic ultraviolet absorption at 232 mμ. The enzyme acted as a β-endo-N-acetylhexosaminidase; it demonstrated transglycosylation activity. For these reasons, the authors conclude that mackerel gastric hyaluronidase belongs to the same general type as bovine testicular hyaluronidase.
[3 figures, 1 table, 8 references] LB

0.38 AN ALKALINE PHOSPHATASE IN THE CLAM MERETRIX LUSORIA (GMELIN), WITH AFFINITIES FOR NUCLEOTIDES

Umemori-Aikawa, Yoko (Department of Biology, Chiba University, Chiba, Japan)
Comparative Biochemistry and Physiology 40, No. 2B, 347-358 (October 15, 1971)

An alkaline phosphatase (optimum pH at 8.8) was extracted from the midgut of the clam. The enzyme decomposed 2′-, 3′-, and 5′-AMP; 5′-dAMP; 5′-UMP; 5′-IMP; 5′-GMP; 5′-CMP; 5′-ADP; ATP, β-glycerophosphate, and p-nitrophenyl phosphate at pH 8.8, but did not attack L-α-lecithin and sodium creatine phosphate.
[8 figures, 1 table, 15 references] FTP

0.322 (1.37) THE AMINO ACID SEQUENCE AROUND FOUR CYSTEINE RESIDUES IN TROUT ACTIN

Bridgen, John (Astbury Department of Biophysics, University of Leeds, Leeds LS2 9JT, United Kingdom)
Biochemical Journal 123, No. 4, 591-600 (July 1971)

The author's purpose in undertaking this work was to try to obtain more information about the number, location, and function of thiol groups in actin. He isolated four unique carboxymethylcysteine-containing peptides from tryptic and chymotryptic digests of trout muscle actin and determined their amino-acid sequences. The sequences were quite similar to the corresponding sequences reported by other workers for rabbit actin; one of the radioactive peptides was the C-terminal peptide; one sequence probably contained the cysteine residue from the N-terminal region of the protein.
[5 figures, 10 tables, 31 references] LB

0.35 FLUORESCENT ANALOGS OF INSECTICIDES AND SYNERGISTS. SYNTHESIS AND REACTIONS OF ACTIVE-SITE-DIRECTED FLUORESCENT PROBES

Himel, Chester M., Wissam G. Aboul-Saad, and Solang Uk (Department of Entomology, University of Georgia, Athens, Ga. 30601)
Journal of Agricultural and Food Chemistry 19, No. 6, 1175-1180 (November-December 1971)

The researchers synthesized fluorescent analogs of insecticides, synergists, and a series of enzyme inhibitors. They indicate that the synthesis of designed fluorescent molecules to meet specific requirements is important in the application of fluorescence spectroscopy to research involving the mechanism and mode of action of insecticides and synergists in vitro and in vivo. Favorable fluorescence characteristics were imparted to fluorescent probe molecules by the 5-dimethylaminonaphthalene-1-sulfonyl (dansyl) moiety.
[2 figures, 6 tables, 26 references] FTP

0.322 (9.11)

example. They did conclude that racemization of isoleucine will be complete in from 15 × 10^6 to 20 × 10^6 years; that the ratio of alloisoleucine to isoleucine is a reliable indicator of age for samples less than 400,000 years old; and that although racemization is a valuable chronological tool, its use will depend on a thorough understanding of the diagenetic reactions of the particular amino acids being studied. [2 figures, 4 tables, 32 references] LB

0.5 BACTERIOPHAGES OF CLOSTRIDIUM BOTULINUM AND CLOSELY RELATED ORGANISMS

Eklund, M. W., F. T. Poysky, C. A. Smith, and S. M. Reed (Bureau of Commercial Fisheries, Technological Lab., Seattle, Wash.)
Final Summary, Contract AT(49-7)-2442, 23 pp. (July 1970). Available from the National Technical Information Service, Operations Division, Springfield, Va. 22151. Order No. TID-25749.
Nuclear Science Abstracts 25, No. 19, 4419 (October 15, 1971)

0.5 ISOLATION OF PSYCHROPHILIC BACTERIOPHAGE-HOST SYSTEMS FROM REFRIGERATED FOOD PRODUCTS

Whitman, P. A., and R. T. Marshall (Department of Food Science and Nutrition, University of Missouri, Columbia, Mo. 65201)
Applied Microbiology 22, No. 2, 220-223 (August 1971)

This article reports on the prevalence and concentrations of bacteriophage in refrigerated foods. Thirty-eight bacteriophage-host systems were isolated from 22 refrigerated food products (examined under psychrophilic conditions). Isolates of phage-host systems were obtained from ground beef, pork sausage, chicken, raw skim milk, and oysters; no isolations were made from liquid egg whites and processed meat products. The authors conclude that phage-host systems exist in refrigerated food products. Apparently, the phage and the host are present as food contaminants, and the phages enter either as prophages within lysogenic hosts or as free, virulent phages. [2 tables, 21 references] FTP

0.32 MOLECULAR WEIGHT OF THE PHOTOPROTEIN AEQUORIN

Kohama, Y., O. Shimomura, and F. H. Johnson (Department of Biology, Princeton University, Princeton, N.J. 08540)
Biochemistry 10, No. 22, 4149-4152 (October 26, 1971)

The authors studied the photoprotein aequorin (isolated from the luminescent jellyfish Aequorea) by means of sedimentation analysis, gel filtration, gel electrophoresis, and functional group analysis. The results indicate a molecular weight of aequorin that is 31,000±1,000, a one to one ratio of functional groups to aequorin molecules, and no evidence of subunits.
[3 figures, 1 table, 9 references] FTP

0.116 (6.79) ULTRAFILTRATION

McDonald, D. P.
Mfg Chem. Aerosol News 42, No. 2, 33-34 (1971)
BPMIRA Abstracts 24, No. 7, Abstract No. 2136, 440 (July 1971)

The use of Iopore membranes for the separation of solutes in the nominal molecular weight range 1200-200000 from a solvent is described. Applications discussed are the production of glucose by enzyme hydrolysis of starch, the production of lactose from whey, the concentration of protein in fish blood water, and in the production of detergent enzymes. D.B. Reprinted

0.5 (3.15) STUDIES ON THE RADIORESISTANCE OF BACILLUS SPORES. PART I. COMPARATIVE STUDIES ON THE RADIORESISTANCE AND CHEMICAL COMPOSITION OF BACILLUS SPORES

Yamazaki, Kunio (Department of Biology, Tokyo Metropolitan Isotope Research Center, Setagaya-ku, Tokyo, Japan)
Agricultural and Biological Chemistry 35, No. 9, 1449-1458 (September 1971)

In this study, the researchers determined the radioresistance of the spores of 46 strains of 15 species of the genus Bacillus. Three kinds of sporulating media were used. The spores of the Bacillus showed wide differences in their radioresistance from one species to another and from one strain to another. Furthermore, the radioresistance of the spores depended upon the sporulating medium used.

The radioresistance of the Bacillus spores showed no correlation with their contents of dipicolinic acid, calcium, and magnesium, but showed slight correlation between radioresistance and the molar ratio of Ca to dipicolinic acid or Mg to Ca. In some groups, the radioresistance of the Bacillus spores correlated with their guanine + cystosine content of deoxyribonucleic acid. No correlation existed between heat resistance of the Bacillus spores and radioresistance of the spores. [12 figures, 3 tables, 16 references] FTP

0.6 (9.1) REVIEW OF THE FISHERIES RESEARCH BOARD OF CANADA 1969-1970

Anonymous
Review of the Fisheries Research Board of Canada 1969-1970, 217 pp. (1971) (Information Canada, Ottawa, Ontario, Canada) Catalog No. Fs 91-2/1970.

The program of the Fisheries Research Board of Canada is designed to assist in conserving, increasing, and making better use of renewable aquatic resources (fishes, marine mammals, shellfish, other invertebrates, and aquatic plants). The Board's present program is considered under three headings: commercial and recreational fisheries research, environmental research, and products and processing research. This Review describes briefly some of the highlights of activities during 1969-1970 and discusses in more detail the various research programs. The Review also contains a list of personnel and a list of publications and reports for the period. FTP

0.5 MODIFIED SELECTIVE AND DIFFERENTIAL ISOLATION MEDIUM FOR VIBRIO PARAHAEMOLYTICUS

Twedt, Robert M., and Rose Mary E. Novelli (Division of Microbiology, Food and Drug Administration, Cincinnati, Ohio 45226)
Applied Microbiology 22, No. 4, 593-599 (October 1971)

J. Baross and J. Liston [Nature (London) 217, 1263-1264 (1968)] formulated a semiselective salt-starch-agar (0.5% soluble starch, 0.3% peptone, 0.1% yeast extract, 0.5% NaCl, 1.5% agar; pH 7.5) for recovery of Vibrio parahaemolyticus from sea fish and sea water. In the present study, the authors systematically examined the effect of each constituent of the formulation on the growth of V. parahaemolyticus and competitive species characteristic of the marine environment. As a result, they developed a modified formulation that consisted of: peptone, 2.0%; yeast extract, 0.2%; corn starch, 0.5%; NaCl, 3.0%; agar, 1.5% (pH 8.0). [7 tables, 14 references] FTP

0.6 (3.9) PRODUCING PROTEINS BY FERMENTATION

Tanaka, K., K. Yamaguchi, and M. Yamamoto; Kyowa Hakko Kogyo Co. Ltd. (pat.)
Canadian Patent 870,584
Food Technology 25, No. 9, 78 (September 1971)

This is an aerobic fermentation process for converting hydrocarbons to protein. FTP

0.7 (0.32)(6.139) METABOLISM OF HEAT-DAMAGED PROTEINS IN THE RAT. INFLUENCE OF HEAT DAMAGE ON THE EXCRETION OF AMINO ACIDS AND PEPTIDES IN THE URINE

Ford, J. E., and C. Shorrock (National Institute for Research in Dairying, Shinfield, Reading RG2 9AT, England)
British Journal of Nutrition 26, No. 2, 311-322 (September 1971)

Although severe overheating is known to impair the nutritional quality of protein foods, the nutritional consequences and the chemical mechanism of the heat damage have not been established. Growth tests on rats fed heated cod fillets have indicated that some of the impairment may be attributed to great differences in the rates of enzymic release of different amino acids. Several investigators have found that although digestibility decreases as the severity of the heat treatment increases, the decrease is not enough to explain the fall in net protein utilization. The indication is that some of the "digested methionine" from the heated proteins may be biologically unavailable. Another possibility is that a significant proportion of the amino acids, even after absorption from the gut, may remain locked in indigestible peptide residues and thus be biologically unavailable. This paper compares the content and the composition of peptides and free amino acids excreted in the urine from rats first fed unheated cod muscle or skim-milk powder and then fed heat-treated cod (heated in an air oven for 20 hr. at 135° C.) or casein (heated either as the cod muscle was or in steam for 4 hr. at 121° C.).

Peptide-bound amino acids excreted by rats fed unheated cod was 18.57 μmol/rat/day; by rats fed heat-treated cod, 48.81 μmol/rat/day. The composition of the peptide also changed with the change in dietary protein--excreted lysine changed from 2.98 μmol (16.0% of the total) to 20.30 μmol (41.6% of the total); aspartic

 (over)

0.5 CULTURAL ESTIMATION OF YEASTS ON SEAWEEDS

Seshadri, Raja, and John M. Sieburth (Narragansett Marine Laboratory, University of Rhode Island, Kingston, R.I. 02881)
Applied Microbiology 22, No. 4, 507-512 (October 1971)

In the course of a study of the association of yeasts with seaweed, the authors had to first develop a procedure for the preparation of seaweeds and a satisfactory medium for the cultivation of yeasts. Their results are reported in this paper.

Five-percent suspensions of freshly harvested seaweeds were used as an inoculum. The conditions for satisfactory growth of yeast and for visualization as red colonies on membrane filters were achieved by using a basal glucose-Trypticase-yeast extract-agar at pH 7.0 supplemented with 100 mg. each of chloramphenicol and 2,3,5-triphenyl tetrazolium chloride per liter. Maximal counts were obtained when the algae were triturated in prechilled (4° C.) sea water in a blender for from 2 to 5 min. The phenolic inhibitory materials that are released from phaeophytes during the triturating process were removed by use of a modified Cholodny filtration [H. W. Jannasch and G. E. Jones, Limnol. Oceanogr 4, 128-139 (1959)]. In a preliminary survey, the authors found that yeasts were epiphytic on nine species of seaweeds. [6 tables, 31 references] FTP

0.7 (0.32)(6.139)

acid from 2.83 µmol (15.2%) to 6.38 µmol (13.1%); and glutamic acid from 5.10 µmol (27.5%) to 7.30 µmol (15.0%). These three amino acids constituted almost 70% of the total amino-acid residues. The excretion of free amino acids increased correspondingly, from 53.74 µmol/rat/day to 114.36 µmol/rat/day. The lysine lost in urinary peptide and free amino acids combined amounted to 1.5% of the total lysine ingested via heat-treated cod; via unheated cod, it was 0.3%.

The changes in the composition of the urinary peptide and free amino acids excreted by rats fed similarly heat-treated casein were less marked. Excretion of total urinary peptide did not increase, and the increase in the lysine content of the peptide was smaller than that from rats fed cod. For both proteins, damage to lysine was greater than to methionine.

The results show that no great part of the nitrogen absorbed during digestion of the heat-treated proteins was excreted as unavailable peptide. Assuming the digestibility of the heated cod fillet is 90%, the authors estimate that of the about 0.6 g. of nitrogen absorbed by each rat per day, about 0.2% is excreted as peptide and about 0.6% as free amino acids. These percentages plus those for lysine losses led the authors to conclude that urinary losses of undigested peptide residues are only marginally important nutritionally.
[2 figures, 4 tables, 22 references] LB

0.7 ZINC HOMEOSTASIS DURING PREGNANCY

Anonymous
Nutrition Reviews 29, No. 11, 253-254 (November 1971)

Pregnant rats are unable to mobilize maternal stores of zinc for the benefit of the fetus. The store of available zinc in the body appears to be small. No information is available on the mechanism by which zinc is bound to the soft tissues of the body. FTP

0.5 EFFECTS OF HYDROSTATIC PRESSURE AND TEMPERATURE ON THE UPTAKE AND RESPIRATION OF AMINO ACIDS BY A FACULTATIVELY PSYCHROPHILIC MARINE BACTERIUM

Paul, Kala L., and Richard Y. Morita (Department of Microbiology and Oceanography, Oregon State University, Corvallis, Oreg. 97331)
Journal of Bacteriology 108, No. 2, 835-843 (November 1971)

The data suggest that the uptake of amino acids (glutamic acid, glycine, phenylalanine, and proline) by marine bacterium MP-38 is inhibited by high pressure and low temperature, but the respiratory enzymes, necessary for subsequent amino-acid metabolism, are not affected to any great degree. Apparently the marine bacteria are unable to grow under pressure because the uptake of amino acids by the cells is inhibited under pressure. [11 figures, 19 references] FTP

0.6 PRODUCTION OF TENDER BEEF

Joseph, R. L. (Agricultural Institute, Dublin, Ireland)
Food Manufacture 46, No. 10, 29-32, 64 (October 1971)

The author discusses the tenderizing of meat at the farm and processing plant stages. Age of the animals at time of slaughter is related to the tenderness of the beef; the breed and the fatness of the animal apparently are not as important as previously thought. Aging of beef (meat) improves tenderness. The author discusses modern methods of tenderizing meat, the use of enzymes for tenderizing beef, and the relation between the ultrastructure of meat and the tenderness of meat.
[2 figures, 58 references] FTP

0.5 STUDIES ON THE FERMENTATION OF PETROCHEMICALS (I) TAXONOMIC STUDIES ON ARTHROBACTER SP. ISOLATED FROM SOIL

Ueyama, Hideo, Yoshihito Yamauchi, Norihiro Tsuji, and Takashi Fukimbara (Institute of Physical and Chemical Research, Wako-shi, Saitama, Japan)
Journal of Fermentation Technology 49, No. 7, 581-586 (1971)

This article reports on a taxonomic study of a strain of soil bacteria that could grow in a medium containing isopropyl alcohol as the sole source of carbon. The strain is considered to be a species closely related to Arthobacter fluescens. The organism assimilates various alcohols except methyl alcohol, glycols except ethylene glycol, and n-paraffinic hydrocarbons (C10 to C17).
[Abstract and tables in English; text in Japanese]
[2 figures, 7 tables, 9 references] FTP

0.6 SOS/70 PROCEEDINGS -- NOW AVAILABLE
(9.6)

Anonymous
Food Technology 25, No. 11, 14 (November 1971)

Copies of the Proceedings of SOS/70, The Third Annual Congress of Food Science and Technology, held in Washington, D.C., August 1970, are now available through the Institute of Food Technologists, 221 N. La Salle Street, Suite 2120, Chicago, Ill. 60601. Prices: Congress Registrant, $7.50 first copy, $15 each additional copy; Student Registrant, $2.50 first copy, $15.00 each additional copy; Non-Registrant, $15 each copy. The chapters in the book are: Education for Food Science and Technology, Information and Documentation, Food Acceptance in a Changing World, Nutritional Considerations in the Application of Food Technology, New Sources of Proteins, Food Fat and Human Health, Biological Evaluation of the Nutritive Value of Foods, Sensory Properties of Foods (Flavor), Food Engineering, Food Preservation and Protection, Physical and Chemical Properties of Foods, Food Safety, Food Laws and Regulations, Water Supply and Disposal. FTP

2.06 GELLED FISH PRODUCT

Schneider, E.; Wardley Products Co., Inc. (pat.)
U.S. Patent 3,591,389
Food Technology 25, No. 11, 116 (November 1971)

The gelled fish product contains the edible food with a binder, guar gum, and a chelating agent. FTP

2.3 FISH SKINNING DEVICE

Townsend, Ray T. (assignor to Townsend Engineering Co., Des Moines, Iowa)
U.S. Patent 3,613,154
Official Gazette of the United States Patent Office 891, No. 3, 903 (October 19, 1971)

This fish-skinning device consists of a feed tray mounted on a support and adapted to support the fish to be skinned thereon. FTP

2.05 TANK TROUT AS CARRIERS OF CLOSTRIDIUM BOTULINUM AND THE
(1.37)(3.4) CAUSE OF BOTULISM. 3. DETECTION OF CLOSTRIDIUM BOTULINUM TYPE E IN A TANK FISH FARM AND IN FRESH AND SMOKED TROUT FROM VARIOUS SOURCES

Bach, R., et al.
Arch. Lebensmittelhyg. 22, No. 5, 107-112 (1971) (In German)
BFMIRA Abstracts 24, No. 8, Abstract No. 2646, 544 (August 1971)

Clostridium botulinum type E was found in the gut contents of trout, in the silts of the tanks and in commercial smoked trout fillets. In experiments on the influence of vacuum packing and storage temperature on growth and toxin formation in smoked trout by Cl. botulinum no conclusions could be reached. Marked spoilage occurred in trout fillets stored at 10° C, 20° C and 30° C after 10 days. A storage temperature of 5° C reduced spoilage but did not prevent toxin formation. C.S.B. Reprinted

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2.145 MANNED MOBILE SUBMERSIBLE

Sturm, Rolland G. (1320 Forbes Drive, Huntsville, Ala.), and John M. Coon (Rte 2, Petersburg, Tenn.) (pat.)
U.S. Patent 3,613,615
Official Gazette of the United States Patent Office 891, No. 3, 1020 (October 19, 1971)

This Geophysical Exploratory Manned Mobile Submersible consists of a polyhedral transparent personnel command unit supported by a quadritubular hull. FTP

2.05 FOOD POISONING AND SALMONELLA INFECTIONS IN ENGLAND AND WALES, 1968

Vernon, E.
Publ. Health 84, No. 5, 239-260 (1970)
BFMIRA Abstracts 24, No. 8, Abstract No. 2687, 553 (August 1971)

An annual report, by the Public Health Laboratory Service, in which the following details are given of food poisoning outbreaks: frequency of outbreaks, deaths, seasonal variation, location of general outbreaks, vehicles of infection. Under the latter heading particular foods are considered, meat and poultry being the vehicle of infection in 80 out of 95 cases. Other foods incriminated are shellfish and other fish, milk, beverages, desserts, eggs, and vegetables. Details are given of the actual species of Salmonella which was found to be the causal agent in food poisoning. The incidence of food poisoning caused by Staphylococci is also reviewed. The largest outbreak resulted from the consumption of trifles [cake or fruit served with custard and cream] which caused illness in 63 persons. Cold chicken and jelly and cold chicken and ham also caused large numbers of persons to be admitted to hospital. In the cases of Clostridium welchii food poisoning, the vehicle of infection was always meat or poultry. Poisoning due to copper sulphate from a corroded geyser [water heater] was also recorded.

Reprinted
C.S.B.

2.113 ANTIFOULING PAINTS

Yokoo, Makoto (Toyonaka, Japan), Junj Ogura (Minoo, Japan), and Hiroshi Ikeda (Tatsuki, Japan); assignors to Takeda Chemical Industries, Ltd. (pat.)
U.S. Patent 3,615,744
Official Gazette of the U.S. Patent Office 891, No. 4, 1535 (October 26, 1971)

This antifouling paint, useful in preventing marine growth on ship bottoms, hulls, nets, and piles, contains a synergistic combination of 2-amino-3-chloro-1,4-naphthoquinone, a copper compound (e.g. a basic copper sulfate), and an organic tin compound (tributyl tin fumarate, tributyl tin fluoride), in a suitable vehicle.

FTP

2.3 SHAPING OF FOODSTUFFS

Marshall, Robert Swinburn (Lowestoft, England); assignor to Lever Brothers Co. (New York, N.Y.) (pat.)
U.S. Patent 3,615,686
Official Gazette of the U.S. Patent Office 891, No. 4, 1526 (October 26, 1971)

This is a method of forming unit portions of foodstuffs such as reformed shrimp.

FTP

2.118 FISHING AND MODERN STORAGE PROCESSES FOR SEA PRODUCTS

Crepey, J. R.
Ann. Hyg. Langue 6, No. 2, 21-32 (1970) (In French)
BFMIRA Abstracts 24, No. 7, Abstract No. 2092, 433 (July 1971)

Recommendations are given concerning the freezing and storage of fish. Mention is made of the French regulations which require that the core temperature of -5° C is obtained within two hours and cooled further to -18° C. Freezing techniques and equipment are discussed, in particular those systems based on cryogenics.

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H.M.S.

2.3 CONTINUOUS COOKER

Hickey, Frank David (San Jose, Calif.); assignor to FMC Corp. (pat.)
U.S. Patent 3,614,924
Official Gazette of the U.S. Patent Office 891, No. 4, 1372 (October 26, 1971)

This deep fat cooker has multiple annular pocket reels retained on a large cylindrical hub. Food is cooked as the reel pockets (containing the food) move through heated fat.

FTP

2.01 (0.5)(2.15) THE MICROBIOLOGY OF FISH AND FISHERY PRODUCTS -- A PROGRESS REPORT

Shewan, J. M. (Torry Research Station, Department of Trade and Industry, Aberdeen, Scotland)
Journal of Applied Bacteriology 34, No. 2, 299-315 (June 1971)

The author deals with several topics that, although perhaps less interesting technologically, pose basic problems of relatively general interest: the identification and taxonomy of the bacteria found on fresh and spoiling fish, the effect of fish species and of environment on bacterial flora, the effects of handling the fish on floral changes, and the nature and manner of spoilage.

LB

[1 figure, 7 tables, 74 references]

0.7 TRACE ELEMENTS IN FOOD.

Schlettwein-Gsell, D., and S. Mommsen-Straub
Int. Z. VitamForschung 40, No. 5, 659-683 (1970) (In German, English summary)
BFMIRA Abstracts 24, Supplement, Abstract No. 2367, 490 (July/August 1971)

I. Zinc; pp. 659-672.

(Abstract No. 2367) Data, collected from 42 references are presented on the zinc content of foods. Such information is of interest since the zinc content of the diet has been connected with diabetes and multiple sclerosis.

II. Cobalt; pp. 673-683.

(Abstract No. 2368) Data on the cobalt content of foods are reviewed. 32 references.

Reprinted
S.M.S.

2.05 ANTIGENIC SCHEMA AND EPIDEMIOLOGY OF VIBRIO PARAHAEMOLYTICUS

Zen-Yoji, H., et al.
Hlth Lab. Sci. 7, No. 3, 100-108 (1970)
BFMIRA Abstracts 24, Supplement, Abstract No. 2375, 491 (July/August 1971)

The presence of Vibrio parahaemolyticus in seawater and seafoods is discussed as well as its occurrence in food poisoning outbreaks associated with seafoods.

Reprinted
H.M.S.

2.3 BONITO PROCESSING
(3.331)

Swartz, William E. (McKeesport, Pa.); assignor to Calgon Corp. (pat.)
U.S. Patent 3,620,767
Official Gazette of the U.S. Patent Office 892, No. 3, 1045 (November 16, 1971)

Previously frozen bonito are treated prior to cooking with sodium tripolyphosphate or an orthophosphate so as to increase the yield of cooked meat. FTP

3.15 STERILIZATION PROCESS

Sulzer Brothers Ltd. (pat.)
British Patent 1,230,950
Food Technology 25, No. 10, 70 (October 1971)

Sealed packages containing a foodstuff and an oxygen-absorbing material (such as bentonite) are treated with ionizing radiation. FTP

3.11 INTERACTION OF PRESERVATIVES WITH CETOMACROGOL

Kazmi, S. J. A., and A. G. Mitchell (Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, B.C., Canada)
Journal of Pharmacy and Pharmacology 23, No. 7, 482-489 (July 1971)

The interation of the nonionic surfactant cetomacrogol with five commonly used preservatives (benzoic acid, p-hydroxybenzoic acid, methyl p-hydroxybenzoate, propyl p-hydroxybenzoate, and chloroxylenol) was examined. Of the various methods used to express this interaction, the Scatchard equation (published in 1949) is most satisfactory for describing the binding data: $r/[D_f] = nK - rK$, where r is the molar ratio of bound solute to total protein, $[D_f]$ is the concentration of free solute in mol/liter, n is the maximum number of independent binding sites on the protein, and K is the association constant. Since, in solute-surfactant interactions, the binding sites within the micelles probably do not behave independently of one another, and since the uptake of solute into the micelles may progressively alter the interaction between the binding sites and the solute (leading to a change in both the number of sites available and the association constant), the curve describing the interaction must be plotted over a wide range of $[D_f]$. Then the n and K values can be determined from the slope in the region of interest. For preservatives, the concentration of free preservative required for antimicrobial activity (that is, a concentration equal to or greater than the minimum inhibitory concentration) is the region of interest. Substitution of the values determined from the Scatchard plot into the following equation

$$[D_t] = \left[\frac{nK[D_f][M]}{1 + K[D_f]}\right] + [D_f] = [D_f]\left[\frac{nK[M]}{1 + K[D_f]} + 1\right]$$

 (over)

3.237 FROZEN FISH PRODUCT

Schjolberg, E. (pat.)
U.S. Patent 3,579,359
Food Technology 25, No. 9, 64 (September 1971)

Ground raw fish is formed into a band and then frozen. The bandlike product can be portioned into fish sticks or similar forms. FTP

3.2382 PACKAGING MATERIALS: THE INTER-RELATIONSHIP BETWEEN THE MICRO-CLIMATE WITHIN THE PACKAGE, SHELF LIFE AND QUALITY

McDougall, J.
Fd Technol. N.Z. 6, No. 4, 20-24 (1971)
BFMIRA Abstracts 24, No. 9, Abstract No. 3126,638 (September 1971)

In this article a number of packaging films are considered. The micro-climates, both physical and biological, which are set up when meat is packaged in such flexible wrappings are discussed. On the basis of points which he brings to light in the paper the author challenges the widely held belief in the hygienic, preservative and protective properties of modern plastic films. S.M.S.
Reprinted

2.9 TWO TOXINS FROM A POISONOUS SAMPLE OF MUSSELS MYTILUS EDULIS

Evans, M. H.
Br. J. Pharmacol. 40, No. 4, 847-865 (1970)
BFMIRA Abstracts 24, No. 7, Abstract No. 2017, 418 (July 1971)

A report is given of the investigations into the nature of toxins responsible for the paralytic shellfish poisoning which affected a number of people in Northumberland during May, 1968. H.M.S. Reprinted

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3.2386 ULTRASONIC WELDING OF POLYETHYLENE INSERTS FILLED WITH FISH PRODUCTS

Volkov, S. S., Yu. N. Orlov, and R. N. Astakhova (MVTU im. Baumana, Moscow,U.S.S.R.)
Chemical Abstracts 72, No. 20, 101513m (May 18, 1970)

3.11 SEA-FOOD PRESERVATION

Eisai Co. Ltd. (pat.)
Japanese Patent 19576/71
Food Technology 25, No. 11, 118 (November 1971)

Fresh seafoods are soaked in aqueous solutions containing a lysozyme salt, amino acids, and sodium chloride. FTP

3.11 LB

permits calculation of the preservative concentration required. ([D_t] is the total solute concentration and [M] is the surfactant concentration.)
[5 figures, 1 table, 32 references]

2.9 PROBLEMS OF TOXICANTS IN MARINE FOOD PRODUCTS. 1. MARINE BIOTOXINS

Bagnis, R., et al.
Bull. Wld Hlth Org. 42, No. 1, 69-88 (1970)
BFMIRA Abstracts 24, Supplement, Abstract No. 2372, 491 (July/August 1971)

The risk of widespread poisonings by biotoxins due to increased fishing into tropical waters is discussed. The biotoxins are of two main types, phytotoxins and zootoxins. The zootoxins are classified further and their sources described.
Reprinted
H.M.S.

3.18 CONVEYOR STERILIZATION

Garvin, D. F., and O. T. Aepli; BASF Wyandotte Corp. (pat.)
U.S. Patent 3,583,914
Food Technology 25, No. 10, 70 (October 1971)

Conveyors for foodstuffs are sterilized with aqueous solutions containing sequestering agents, anionic surface active agents, fatty acid soaps, propylene glycol, nonanionic surface active agents, and a compound selected from the group consisting of bisphenols, thiadiazine thione, and dithiocarbamate. FTP

3.2382 IMPROVED FILM LAMINATION, PACKAGE FORMED THEREWITH AND METHOD OF PRODUCING SAME

Oscar Mayer and Co., Inc., U.S.A. (pat.)
British Patent 1,233,936
BFMIRA Abstracts 24, No. 8, Abstract No. 2814, 578 (August 1971)

The ethylene-vinyl acetate copolymer film stretches easily, is brilliant and clear, flexible at low temperatures thus resisting cracking and possible bacterial contamination. This film is particularly useful for packaging bacon and similar products which are stored in refrigerated cabinets. Reprinted

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3.2387 CONTAINER TRAFFIC IN RELATION TO IMPORTED FOOD
(9.3)

Semple, A. B.
Roy. Soc. Hlth J. 91, No. 2, 73-75 (1971)
BFMIRA Abstracts 24, Supplement, Abstract No. 2555, 526 (July/August 1971)

Some of the terms associated with the transport of goods in bulk containers are defined, the procedure for examination of such cargos outlined and the advantages and hazards of containerization discussed. (From a paper presented at the Third International Health Conference, Edinburgh, 21-25 September, 1970). C.C.E. Reprinted

4.14 ISOVALEROYL TRIGLYCERIDES FROM THE BLUBBER AND MELON OILS OF THE BELUGA WHALE (DELPHINAPTERUS LEUCAS)

Litchfield, Carter (Texas Agricultural Experiment Station, College Station, Tex. 77843), and R. G. Ackman, J. C. Sipos, and C. A. Eaton (Halifax Laboratory, Fisheries Research Board of Canada, Halifax, Nova Scotia, Canada)
Lipids 6, No. 9, 674-681 (September 1971)

Earlier workers have postulated that the melon of fatty tissue in the forehead of the beluga whale and other Odontoceti (dolphins, porpoises, toothed whales) functions as a sound transducer and possibly as a sonic lens in the echolocation process of these animals. Apparently, the sound transmitter for echolocation lies in the nasal passages just behind the melon. The sound is picked up by the fatty tissue in the melon and transmitted, directionally, to the sea water in front of the head of the animal. Furthermore, a fatty oil is closely impedance-matched to sea water and the energy losses during the transfer of sound waves from melon to sea water are quite low [K. S. Norris in "Evolution and Environment," edited by E. T. Drake, Yale University Press, New Haven, Conn., pp. 297-324 (1968)]. In the present study, the authors found that a triglyceride, monoacyl-diisovalerin, constitutes 86.7 mole percent of the melon oil of the beluga whale. Also, the long-chain acyl moiety of this triglyceride is primarily iso and straight chain C_{11}-C_{17} fatty acids. The authors state that the Odontoceti are the exceptional animals which exploit this acid by incorporating it into their head and blubber oils. They say, further, that this unusual compound may play a role in the echolocation system of the beluga whale.
[4 figures, 3 tables, 33 references] FTP

3.63 FISH MEAL
(6.132)

Salomon, A. (pat.)
Japanese Patent 16137/71
Food Technology 25, No. 10, 66 (October 1971)

Boiled fish meat is dehydrated, then treated with hydrogen peroxide. The treated material is heated to a temperature higher than 70° C. to convert it to a slurry and it is then dehydrated. FTP

4.5 LIPID OXIDATION IN MEAT AND MEAT PRODUCTS -- A REVIEW
(0.30)

Love, Jane D., and A. M. Pearson (Food Science Department, Michigan State University, East Lansing, Mich. 48823)
Journal of the American Oil Chemists' Society 48, No. 10, 547-549 (October 1971)

Oxidation of the lipids of meat or meat products can occur in the stored triglycerides or the tissue phospholipids. Ferric heme pigments appear to be the major prooxidants in tissue lipid oxidation. Oxidation of the pigment and of the lipid are interrelated, and ferric hemes are thought to promote lipid oxidation; as a result of this oxidation the hemes are destroyed. Also, nonheme iron and ascorbic acid may function as prooxidants in meat. Sodium chloride accelerates oxidation of the triglycerides. Cooked meat deteriorates rapidly because of oxidation of the tissue lipids. The cured pink ferrous form of the meat pigment does not promote the rapid oxidation undergone by cooked uncured meat. Chilled and frozen meats are susceptible to lipid oxidation. Lipid oxidation in stored freeze-dried meats may result in protein denaturation and cross linking. Chelating agents as well as antioxidants are the most effective inhibitors of lipid oxidation in meats. [32 references] FTP

4.11 ACTIVATION ANALYSIS OF TRACE ELEMENTS IN LIPIDS WITH EMPHASIS ON MARINE OILS

Lunde, Gulbrand (Central Institute for Industrial Research, Forskningsvn. 1, Oslo 3, Norway)
Journal of the American Oil Chemists' Society 48, No. 10, 517-522 (October 1971)

This is a short introduction to the activation analyses--some of the main features of the method when applied to biological materials are described. FTP
[6 figures, 3 tables, 6 references]

3.336 IMPROVEMENTS IN OR RELATING TO THE PREPARATION OF STERILIZED SLURRIES

Shore, D. T.; The A.P.V. Co. Ltd. (pat.)
British Patent 1,235,494
BFMIRA Abstracts 24, No. 8, Abstract No. 2829, 580 (August 1971)

The apparatus is designed for sterilizing foodstuffs such as soups with high solids content, meat stews, beans in sauce and pie fillings. The liquid phase is sterilized separately. The solid phase plus some of the liquid phase is sterilized by steam injection followed by holding in a tube. The two are then combined. Reprinted

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4.5 (0.35) METAL-CATALYZED LIPID OXIDATION AND CHANGES OF PROTEINS OF FISH

Castell, Charles H. (Fisheries Research Board of Canada, Halifax, Nova Scotia, Canada)
Journal of the American Oil Chemists' Society 48, No. 11, 645-649 (November 1971)

Muscle of lean fish contains from 0.5 to 1% unsaturated lipids, and during frozen storage such fish rarely becomes rancid. Apparently, the lipids do oxidize and become bound up in lipid-protein complexes, accounting for the toughened texture of over-stored or poorly stored frozen lean fish. In fish of the cod family, this reaction is complicated by the enzymic production of formaldehyde, which forms in the muscle during storage. Direct addition of formaldehyde (to levels in the muscle of from 0.001 to 0.05%) caused marked reductions in the extractable protein of cod muscle.
[8 figures, 1 table, 27 references] FTP

4.5 (0.30) CATALYSTS OF LIPID PEROXIDATION IN MEATS

Kwoh, Theresa Liu (Department of Food and Nutrition, Florida State University, Tallahassee, Fla. 32306)
Journal of the American Oil Chemists' Society 48, No. 10, 550-555 (October 1971)

Hemoprotein and nonheme iron components are catalysts of lipid peroxidation. In the present study, the behavior of hemoprotein and nonheme iron components in model systems and in meats was examined.
[1 figure, 10 tables, 29 references] FTP

4.21 (4.22) OXIDATIVE SPOILAGE AND HYDROGENIZABILITY OF NUTRITIVE WHALE FATS

Rzhavskaya, F. M., and N. V. Vengerova (U.S.S.R.)
Chemical Abstracts 72, No. 25, 131215h (June 22, 1970)

[1 figure, 5 tables, 22 references] FTP

4.14 (0.39) THE LIPID COMPOSITION OF THE BLOOD OF MARINE MAMMALS--II. ATLANTIC BOTTLENOSE DOLPHINS, TURSIOPS TRUNCATUS AND TWO SPECIES OF SEALS, HALICHOERUS GRYPUS AND PHOCA VITULINA

Nelson, Gary J. (Lawrence Radiation Laboratory, University of California, Livermore, Calif. 94550)
Comparative Biochemistry and Physiology 40, No. 2B, 423-432 (October 15, 1971)

The author analyzed the blood lipids of four mature Atlantic bottlenose dolphins, two young gray seals, and one harbor seal. The major lipid in the plasma of the dolphins and the seals was cholesterol esters. The compositions of the plasma phospholipids were similar in both species of seal, but the composition of the plasma phospholipids in the dolphin showed reduced amounts of phosphatidyl choline and elevated amounts of sphingomyelin compared to the samples from the seals. The lipids of the erythrocytes were cholesterol, glycosphingolipids, and phospholipids. In the red cells of the dolphins and the seals, the major components were sphingomyelin, phosphatidyl choline, phosphatidyl serine, and phosphatidyl ethanolamine.
[1 figure, 5 tables, 22 references] FTP

4.11 (7.89) EDIBLE OIL EVALUATION BY ROOM ODOR TESTS: A PRELIMINARY REPORT

Evans, C. D.; Helen A. Moser, G. R. List, H. J. Dutton, and J. C. Cowan (Northern Regional Research Laboratory, U.S. Department of Agriculture, Peoria, Ill. 61604)
Journal of the American Oil Chemists' Society 48, No. 11, 711-714 (November 1971)

This article reports on preliminary results obtained during studies to develop a room odor test for the evaluation of cooking oils by applying established taste panel methodology and statistical evaluation to data obtained directly from heating fats in an isolated room. The fats tested were special soybean salad and cooking oils, hydrogenated soybean oil, and some commercial salad and cooking oils.
[2 figures, 6 tables, 16 references] FTP

3.336 IMPROVEMENTS IN OR RELATING TO CAN STERILISING

Petit, M., and G. Thomas; Établissements J.J. Carnaud and Forges de Basse-Indre, France (pat.)
British Patent 1,235,060
BFMIRA Abstracts 24, No. 8, Abstract No. 2827, 580 (August 1971)

The risk of can collapse is reduced, thus reducing the risk of product recontamination. Cans are sealed at 100° C, or higher, by initially sterilising them at high temperature for a brief time whilst preventing excessive internal vacuum and consequent possible contamination. This is achieved by using cans with one deformable wall and by subjecting the can to excessive external pressure during cooling.
Reprinted

4.5 FLUORESCENT PRODUCTS OF LIPID PEROXIDATION OF MITOCHONDRIA AND MICROSOMES

Dillard, C. J., and A. L. Tappel (Department of Food Science and Technology, University of California, Davis, Calif. 95616)
Lipids 6, No. 10, 715-721 (October 1971)

This paper is a report of studies of lipid peroxidation in liver microsomes and mitochondria and heart sarcosomes from rats fed various levels of α-tocopherol. The authors indicate that this in vitro lipid peroxidation system provided a biochemical model for the production of fluorescent compounds and for the determination of the quantitative relationships among absorption of oxygen, production of thiobarbituric acid (TBA)-reactants, and development of fluorescence. They found that these relationships were related to dietary polyunsaturated fatty acids and their protection by α-tocopherol obtained through dietary sources.
[3 figures, 2 tables, 30 references] FTP

4.61 FISH PRESERVATION

Taiyo Kagaku-Kogyo K.K. (pat.)
Japanese Patent 19575/71
Food Technology 25, No. 11, 118 (November 1971)

Maleic acid esters of glycerol fatty esters and butyl cresol or butyl hydroxy anisole derivatives are incorporated into fish products. FTP

6.193 (6.55) POULTRY RESEARCH -- CONCENTRATE STUDIES

Anonymous
Research in Turkey Nutrition at VPI During 1970
Potter, L. M. (Blacksburg, Va. 24060)
Feedstuffs 43, No. 51, 24 (December 11, 1971)

During three 4-week experiments, researchers at Virginia Polytechnic Institute examined the effect on turkey body weight of feeding poults diets supplemented with methionine, fish meal, microbiological cultures, dried whey, dried skim milk, or erythromycin thiocyanate. The effects are shown below.

Supplement	Amount added	Increase in body weight
		%
Methionine	0.1%	9.8
	0.2%	13.7
Fish meal	5.0%	7.2
Bacillus subtilis	0.5%	0
Aspergillus oryzae	0.05%	0
Liquid streptomyces solubles (and an isolate of these solubles)	?	0
Western live yeasts (culture-20 and culture 2X-2-2-5)	1.5%	0
Lactobacillus acidophilus	0.5%	0

(over)

6.193 (6.55) POULTRY RESEARCH -- NORWEGIAN LAYER DIETS

Anonymous
Archiv. für Geflugelkunde 4, 164-169 (1971)
Solberg, J.
Feedstuffs 43, No. 50, 22 (December 4, 1971)

The usual diet for laying hens in Norway contains from 16 to 17% protein, an energy concentration of from 2,500 to 2,600 kcal. metabolizable energy (ME) per kilogram and 5 or 6% herring meal. Because of the increasing cost of protein feeds, researchers at the Norwegian Agricultural College are evaluating diets containing no herring meal, or only 13% protein supplemented with methionine and lysine.

When 5% herring meal is included in the diet, daily feed consumption is reduced significantly, although ME intake is basically unaffected. Adding 0.1% methionine or reducing the protein level from 16% to 13% increases the degree of fatty liver. None of the diets improve egg production. However, addition of either 0.05 or 0.1% methionine to the 13% protein diet increases egg weight from an original 54.2 to56.5. and 58 g., respectively. Adding 0.05, 0.10, or 0.15% methionine to the diet reduces liver weight and the degree of fatty infiltration; the degree of fatty liver is independent on the level of egg production. LB

6.195 HYDROLYZED-FEATHER FLOUR AS A PROTEIN ADDITIVE IN SWINE FEEDING

Sarti, Domenico M. (Ist. Zootec. Gen., Univ. Perugia, Perugia, Italy)
Chemical Abstracts 73, No. 1, 1355p (July 6, 1970)

6.39 (3.15) HYGIENIC STUDIES ON LAVER OF KOREA. II. THE EFFECTS OF ^{60}Co-RAY IRRADIATION ON THE DEFORMATION OF VITAMIN C, ITS BACTERICIDAL ACTIVITY IN PURPLE LAVER

Park, Dae Sung, Hyun Young Cho, and Kwang Ho Kim
Kor. J. Microbiol. 4, No. 2, 65-68 (1970)
Korean Scientific Abstracts 3, No. 2, Abstract No. 71/231, 63 (31) (April 1971)

In continuation of the previous work (The New Medical Journal, Vol. 12, No. 3, 111 (1969)), the effects of Coγ-radiation on the bactericidal activity against coliform groups, on vitamin C content, and on ascorbate oxidase activity of the purple laver were studied.

1. After 0.1 Mrad/hr. of gamma-irradiation for 1 hr., the coliforms were significantly reduced; and after 10 hr., the coliforms were completely destroyed.
2. Vitamin C content gradually decreased during the gamma irradiation of the laver.
3. Also, the ascorbate oxidase activity was conspicuously decreased by the irradiation.

According to the sensory test, no changes in color appeared after 9-10 hr. of treatment. But the loss of ascorbic acid was much more than that of dehydroascorbic acid after a 10-hr. treatment.
[1 figure, 3 tables, 6 references] Extracter: LB

6.33 EXTRACTION OF AGAROSE AND AGAROPECTIN FROM INDIAN SEAWEEDS

Doshi, Y. A., and P. Srinivasa Rao (Cent. Salt Mar. Chem. Res. Inst., Bhavnagar, India)
Chemical Abstracts 72, No. 25, 128744z (June 22, 1970)

6.193 (6.55)

Supplement	Amount added	Increase in body weight
		%
Dried whey product	5%	5.5 and 8.5 (2 exper.)
Dried skim milk	2.5%	2.5
	5.0%	1.9
Erythromycin thiocyanate	20 g./ton	12.4

The lack of interaction between the methionine and the fish meal indicated that methionine is not a growth-promoting factor in fish meal added to the diet in amounts that hold protein and phosphorus constant. LB

6.32 SEASONAL VARIATIONS IN THE CONTENT OF INDIVIDUAL TOCOPHEROLS IN ASCOPHYLLUM NODOSUM, PELVETIA CANALICULATA, AND FUCUS SERRATUS

Jensen, Arne, (Norw. Inst. Seaweed Res., Norges Tek. Hoegsk., Trondheim, Norway)
Chemical Abstracts 74, No. 7, 28853g (February 15, 1971)

6.32 PERIODATE OXIDATION OF THE INSOLUBLE RESIDUE AFTER SEVERE EXTRACTION OF SOME MARINE ALGAE

Young, E. Gordon (Atl. Reg. Lab., Nat. Res. Counc. Canada, Halifax, Nova Scotia, Canada)
Chemical Abstracts 74, No. 7, 28860g (February 15, 1971)

4.5 (0.30) METAL-CATALYZED OXIDATION IN THE PRESENCE OF WATER IN FOODS

Labuza, T. P., M. Silver, M. Cohn, N. D. Heidelbaugh, and M. Karel (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, Mass. 02139)
Journal of the American Oil Chemists' Society 48, No. 10, 527-538 (October 1971)

In this article, the authors review the results of their studies of oxidation at low moisture content to determine the mechanism by which water interacts in the lipid oxidation process. The studies involved the low moisture range of water absorption where the equilibrium relative humidity is approximately 0% to 50%.

Methyl linoleate was oxidized in model systems that consisted of either cellulose or casein with which the lipid was dispersed with water containing cobalt salts. The material was extruded into Warburg flasks, then it was frozen and freeze-dried at 100 μ Hg and with platen temperature of 80° F. These samples were humidified over saturated salt solutions to give them moisture contents from less than 1 g. H_2O/100 g. solids to 30 g. H_2O/100 g. solids. In some experiments, chelating agents (EDTA and citric acid) in concentrations of from 1 to 10 moles per mole of cobalt ion were used. Oxidation of the linoleate was followed manometrically and by peroxide analysis. At low-water content levels, the water acts as an antioxidant through hydration of the metal catalysts. At high-water contents, water promotes oxidation through its solvent activity. In the region of capillary condensation, the authors indicate that the antioxidant effect of metal hydration is overshadowed by the prooxidant effect of metal solubilization. The water soluble chelating agents act on metals in aqueous solution and their activity is promoted by increased moisture content.
[8 figures, 3 tables, 18 references] FTP

6.194 (6.196) INFLUENCE OF THE QUALITY OF RAW MATERIALS ON THE CONTENT OF FOLIC ACID IN FISH MEAL

Witas, Tadeusz (Inst. Technol. Przem. Rybnego, Wyższa Szk. Roln. Szczecin, Poland)
Chemical Abstracts 75, No. 1, 4161z (July 5, 1971)

6.32 CHEMICAL CONSTITUENTS OF AUSTRALIAN BULL KELP, DURVILLEA POTATORUM

Madgwick, John C., and Bernhard J. Ralph (Sch. Biol. Technol., Univ. New South Wales, Kensington, Australia)
Chemical Abstracts 74, No. 7, 28856k (February 15, 1971)

6.32 MUCILAGINOUS SUBSTANCES OF RED SEAWEEDS (RHODOPHYCEAE). XLVI. ELECTROPHORETIC BEHAVIOR OF RED SEAWEED MUCILAGE

Akahane, Tooru, and Kaoji Katsumura (Numazu Tech. Coll., Numazu, Japan)
Chemical Abstracts 72, No. 17, 87916k (April 27, 1970)

6.37 TANGLE PRODUCT

Kyowa Hakko Kogyo Co. Ltd. (pat.)
Japanese Patent 7516/71
Food Technology 25, No. 9, 78 (September 1971)

A reclaimed tangle product is prepared from waste tangle. FTP

6.37 TANGLE PRODUCT

Yasuda Shokuhin Kogyo Co. Ltd. (pat.)
Japanese Patent 14711/71
Food Technology 25, No. 9, 78 (September 1971)

Seasoned tangle is cooked, then dried to moisture content of 14-16%. The dried material is coated with carboxymethylcellulose and salted with sodium chloride containing sodium glutamate. FTP

7.590 AUTOMATIC COLORIMETRIC DETERMINATION OF N-NITROSO COMPOUNDS

Fan, Tsai-Yi, and Steven R. Tannenbaum (Department of Nutrition and Food Science, Massachusetts Institute of Technology, Cambridge, Mass. 02139)
Journal of Agricultural and Food Chemistry 19, No. 6, 1267-1269 (November-December 1971)

This paper describes a procedure for the automatic analysis of any type of N-nitroso structure. This new method was adapted from the classical approach of cleavage of the compound by ultraviolet irradiation followed by analysis of released nitrite by diazotization and coupling to form a dyestuff.
[3 figures, 2 tables, 17 references] FTP

6.32 ANTIMICROBIAL SUBSTANCES IN ALGAE. 3. QUANTITATIVE DETERMINATION OF ACRYLIC ACID IN SEA ALGAE

Glombitza, Karl W. (Pharmakognostisches Inst., Univ. Bonn, Bonn, Germany)
Chemical Abstracts 73, No. 19, 93311w (November 9, 1970)

7.0 (7.53)(7.41) (7.43) SIMULTANEOUS DETERMINATION OF FAT, MOISTURE, DEFATTED DRY MATTER AND ASH IN MEAT, FISH AND BIOLOGICAL MATERIALS

Lunder, T. L. (Research Department, Nestle Ltd., Lausanne, Switzerland)
Laboratory Practice 20, No. 7, 572-573 (July 1971) (42-43 Gerrard St., London, W1N 7LP, England)

The apparatus described allows the simultaneous determination of fat, moisture, dry matter, and ash on the same sample of biological material. The equipment may be used on sausages, meat, and fish flesh. The results obtained with the apparatus agree with those of the methods of the Association of Official Analytical Chemists. [1 figure, 1 table] FTP

7.0 THREE-DIMENSIONAL STRUCTURE IDENTIFIED FROM SINGLE SECTIONS

Elias, Hans (Chicago Medical School, Chicago, Ill.)
Science 174, No. 4013, 993-1000 (December 3, 1971)

Errors in the identification of objects have been made as a result of faulty interpretation of their flat images or sections. Such misinterpretations can lead to perpetuated errors. In this article, the author describes the mechanism of establishing and perpetuating erroneous concepts relative to histology and other sciences based on the examination of sections. He suggests ways for correct initial identification of shape and structure and for breaking the circuit of erroneous thinking. [16 figures, 18 references] FTP

7.86 (9.19) THE RAPID DETECTION AND DETERMINATION OF SPARSE BACTERIAL POPULATIONS WITH RADIOACTIVELY LABELLED HOMOLOGOUS ANTIBODIES

Strange, R. E., E. O. Powell, and T. W. Pearce (Microbiological Research Establishment, Porton Down, Salisbury, Wiltshire, England)
Journal of General Microbiology 67, Part 3, 349-357 (August 1971)

Most of the methods proposed for rapidly detecting and determining small microbial populations in liquid samples have broad spectrum capability--that is, the microbes present can be detected but not specifically identified. Even if the broad spectrum principles are sound and the sensitivities claimed for the methods are realistic, detection in a number of situations is inadequate without identification. For example, such methods would not show the presence of relatively small numbers of a specific microorganism, an infective bacterium, say, in natural waters, where the microbial flora vary qualitatively and quantitatively over wide ranges.

Most of the methods reported for the rapid, specific identification of microbes are based on immunofluorescence, with either fluorescent dyes or radioactive isotypes of iodine as labels for antibody proteins. Although theoretically an assay based on bacterial uptake of radioactively labeled antibody should be very sensitive, in practice determination of a few bacteria is possible only if, after separation of the labeled immune complex, the variation in the level of nonspecifically attached radioactivity is less than the radioactivity of the immune complex. However, if residual, nonspecifically attached radioactivity (determined by testing blank samples without bacteria) is higher than the radioactivity of the immune complex, even small variations will swamp the signal from the complex. The method described here largely solves the problem of high erratic blank

7.42 HYPERFINE ZEEMAN EFFECT ATOMIC ABSORPTION SPECTROMETER FOR MERCURY

Hadeishi, T., and R. D. McLaughlin (Lawrence Radiation Laboratory, University of California, Berkeley, Calif. 94720)
Science 174, No. 4007, 404-407 (October 22, 1971)

The researchers developed a new type of atomic absorption spectrometer that can detect trace mercury in host material to about 0.04 p.p.m. in 1 min. Chemical separation of the mercury from the host material is not necessary. The apparatus was tested for the determination of mercury in tuna.
[3 figures, 6 references] FTP

7.42 DETERMINATION OF CHROMIUM IN PLANTS AND OTHER BIOLOGICAL MATERIALS

Gary, Earle E., and William H. Allaway (Plant, Soil, and Nutrition Laboratory, U.S. Department of Agriculture, Ithaca, N.Y. 14850)
Journal of Agricultural and Food Chemistry 19, No. 6, 1159-1161 (November-December 1971)

This atomic absorption method for the determination of chromium in biological materials allows the estimation of 4 ng. of chromium per ml. of solution and is free from interferences. By this method, the biological materials are wet digested, the chromium III is isolated from other metals by solvent extraction, and the chromium III chelate of 2,4-pentanedione is extracted into chloroform. Further, the chloroform is evaporated and the chromium compound is taken up in 4-methyl-2-pentanone. The authors indicate that the recovery of added chromium-51 in the digestion step when silver nitrate was present was 100%.
[5 tables, 17 references] FTP

6.54 IMPROVEMENTS IN AND RELATING TO EDIBLE MATERIALS
(3.63)

White, J., and H. E. Shears; Beecham Group Ltd. (pat.)
British Patent 1,234,462
BFMIRA Abstracts 24, No. 8, Abstract No. 2820, 579 (August 1971)

A solid balanced food product is made by mixing protein and carbohydrate in the presence of air to form a porous, cellular, non-crystalline material which is then dried to less than 5% moisture. The dried product is then converted to granular or powder form, mixed with granular or powdered fat and moulded to a desired shape. The product is a nutritionally balanced food. Flavours may be added.
Reprinted

6.54 IMITATION MEAT EXTRACT

Ralston Purina Co., U.S.A. (pat.)
British Patent 1,234,927
BFMIRA Abstracts 24, No. 8, Abstract No. 2825, 579 (August 1971)

A solution of defatted fish solubles is heated at 180-205° F at pH 6-9, under agitation in the presence of a reducing sugar, to develop a beef-like flavour.
Reprinted

7.86 (9.19)

values. Under the conditions recommended, it permits detection of about 500, minimum, vegetative bacteria or bacterial spores within from 8 to 10 min.

Briefly, a sample is treated with ^{125}I-labeled, purified, homologous antibody and then filtered and washed on a Millipore membrane filter. The radioactivity of the separated, labeled, immune complex is then measured. The method is specific accurate, and rapid. Its sensitivity depends on the time allowed for labeled antibody to react with the bacteria--5 or 6 min. is adequate for sparse populations, less time for larger populations. Both sensitivity and accuracy decrease if the samples contain particulate matter that nonspecifically attaches antibody and is retained by the membrane filter. However, if the samples are pretreated with clarified normal rabbit serum for a few minutes before the assay is begun, this type of interference can be avoided.
[3 figures, 1 table, 12 references] LB

8.51 A COMPILATION OF AMINO ACID ANALYSES OF PROTEINS. I.

Kirschenbaum, Donald M. (Department of Biochemistry, College of Medicine, Downstate Medical Center, Brooklyn, N.Y. 11203)
Analytical Biochemistry 44, No. 1, 159-173 (November 1971)

This paper contains a compilation of the amino-acid content of 120 proteins; the analyses reported are mainly from those published within the last 2 years.
[2 tables, 92 references] FTP

7.599 THE DETECTION AND ESTIMATION OF TRACE AMOUNTS OF N-NITROSAMINES IN A FOOD MATRIX

Walters, C. L. (British Food Manufacturing Industries Research Association, Leatherhead, Surrey, England)
Laboratory Practice 20, No. 7, 574-578 (July 1971)

This paper is a review of the published methods for the separation and detection of any N-nitrosamines available in a food matrix. The author stresses the need for unequivocal detection procedures. He describes the separation and concentration of a volatile N-nitrosamine by fractional distillation of its aqueous methanolic solution and its estimation in the products by polarography, gas chromatography, and release of nitrite on ultraviolet irradiation.
[1 table, 39 references] FTP

8. (4.10) OBSERVATIONS ON THE CHEMICAL COMPOSITION AND TOXICITY OF RATFISH (CHIMAERA MONSTROSA)

Hardy, R., and P. R. Mackie (Torry Research Station, Department of Trade and Industry, Aberdeen, Scotland)
Journal of the Science of Food and Agriculture 22, No. 7, 382-388 (July 1971)

In view of the possibility that substantial quantities of ratfish may be present in some catches of fish used for fish meal, the authors determined the chemical composition of the ratfish and tested various tissues of the ratfish for toxicity to mice. For the toxicity tests, extracts of the homogenized tissue were injected intraperitoneally into mice. Tables of data are given showing results of toxicity experiments; lipid class composition; fatty acid composition of total oils; fatty acid composition of the phospholipids, free fatty acids, and sterol esters; fatty acid composition of o-tri-substituted glycerols; fatty acid composition of o-di- and mono-substituted glycerols; glyceryl ether and aldehyde composition; proximate composition of the flesh; protein and amino-acid composition; and free amino-acid composition.

The authors indicated that the o-tri-substituted glycerols were similar in composition to those of the Pacific ratfish Hydrolagus colliei but contained a larger proportion of polyunsaturated acids. Further, the phospholipids were more saturated than is normally the case with marine lipids. The various tissues of the fish (after varying periods of storage) were found to be nontoxic. The flesh was pleasant to eat. [10 tables, 25 references] FTP

9.13 (0.38) THERMAL COMPENSATION IN THE STOMACH OF THE BROOK TROUT (SALVELINUS FONTINALIS MITCHELL)

Owen, T. G., and A. J. Wiggs (Department of Biology, University of New Brunswick, Fredericton, New Brunswick, Canada)
Comparative Biochemistry and Physiology 40, No. 2B, 465-473 (October 15, 1971)

Thermal compensation in the stomach of the brook trout was studied by determining if qualitative or quantitative pepsin alterations occurred as a result of temperature acclimation to 5° and 12° C.

No qualitative differences were found as indicated by the pH and rate-temperature curves for the enzyme. However, quantitative differences did occur; extracts of gastric mucosa from 5° C. trout exhibited 30% greater activity than did those from 12° C. trout.
[4 figures, 26 references] FTP

9.13 (1.92) SEASONAL VARIATIONS IN THE CYANOPHILS AND THE GONADOTROPIC POTENCY OF THE PITUITARY IN RELATION TO GONADAL ACTIVITY IN THE CATFISH, MYSTUS VITTATUS

Singh, T. P. (Dep. Zool., Banaras Hindu Univ., Varanasi, India)
Chemical Abstracts 74, No. 9, 39853h (March 1, 1971)

8.51 (1.30)(9.13) ÉTUDE DES DIVERS COMPOSÉS AZOTÉS DES SALMONIDÉS: PROTÉINES, AZOTE NON PROTÉIQUE, ACIDS NUCLÉIQUES. FACTEURS DE VARIATION [STUDY OF THE DIFFERENT NITROGENOUS COMPONENTS OF SALMONIDAE: PROTEINS, NON-PROTEIN NITROGEN, NUCLEIC ACIDS. VARIATION FACTORS]

Luquet, P. (Station centrale de Nutrition, Centre national de Rescherches zootechniques, 78 - Jouy-en-Josas, France)
Annales d' Hydrobiologie 1, No. 2, 111-132 (1970) (In French; English summary) Service des Publications, Institut National de la Recherche Agronomique, Route de Saint-Cyr, 78, Versailles, France)

In this literature survey, the author reviews the main works dealing with the nitrogen composition of Salmonidae. Among the numerous factors that affect the raw protein content (N×6.25) and the distribution of protein nitrogen, particularly in the muscle, the major effect of the sexual cycle is emphasized. A special section of the review is devoted to the content and composition of the nucleic acids. [15 tables, 87 references] LB

9.16 (9.6) BOOK CHAT

Heighway, Arthur J.
Fishing News International 10, No. 9, obv. 92 f. (September 1971)

This announcement includes that of a new journal and four books devoted to fish culture--distinct from the fish hunting now practiced by marine fisheries.

The new journal will appear in mid-1972. Although a companion to Fishing News International, it will be specialized, devoted to the specific, practical culture of fish. Its aim is to give down-to-earth information on the many diverse factors necessary for achieving success in breeding, cultivating, fattening, processing, and marketing fish. It will be edited by Peter Hjul, who will be backed by the editorial resources and staffs of Fishing News, Fishing News International, and Fishing News (Books) Ltd.

An English translation of Marcel Huet's Traite de Pisciculture will be issued under the title Breeding and Cultivation of Fish. It will appear in early 1972. A translation, by Ichiro Hayashi, of Atsushi Usui's Eel Culture Techniques is also in the publisher's hands. A book by P. H. Milne on the hydrographical and engineering essentials for laying out a modern fish farm, particularly in a marine environment, will be issued early in 1972; and a commissioned book by G. T. Samuel (of the Oceanographic Laboratory, Cochin, India) on the coastal and domestic fish farming in Eastern Asia is also forthcoming.

Full booklists are available on request from Fishing News (Books) Ltd., 110 Fleet Street, London E.C.4.A. 2JL, England. LB

9.16 HATCHERY FOR BRINE SHRIMP EGGS OR THE LIKE
(0.119)

Huslin, Stanley C. (1503 Foulkrod St., Philadelphia, Pa. 19124) (pat.)
U.S. Patent 3,604, 395 (September 14, 1971)

The eggs of brine shrimp (Artemia salina) can be bought in dried form, stored till needed, and then hatched in saline solution at room temperature. Since aeration of the saline solution increases the yield of shrimp from a given batch of eggs, the inventor's objective was to devise a relatively simple, easily used apparatus that would improve the yield of hatchery-produced shrimp. LB

9.16 STUDIES ON THE BIOMASS OF A CRAB, ERIOCHEIR SINENSIS AND
(1.86) ENVIRONMENTAL FACTORS IN ITS HABITAT

Ryu, Bong Suk
Kor. J. Limnol. 3, No. 1-2, 35-43 (1970)
Korean Scientific Abstracts 3, No. 2, Abstract No. 71/213, 58 (26) (April 1971)

The author has examined breeding in the crab Eriocheir sinensis for the purpose of its cultivation. A number of basic environmental factors which influence their biomass were investigated, and the results are as follows.

1. The biomass of Eriocheir sinensis is chiefly restricted to 20-30 cm. water depths.
2. E. sinensis is chiefly a night-traveler, but it also travels in the day when the depth of the water is less than 40-50 cm.; it snuggles down when the water is deeper.
3. The optimum water temperature in the habitat of E. sinensis is 20°-25° C. The marginal living limit ranges from under 7° C to over 35° C.
4. The bottom sediment in the habitat of E. sinensis is mixed--very coarse sand 23.3%, coarse sand 25.7%, fine sand 45.1%, and clay 5.8%.

[8 figures, 7 tables, 7 references] Extracter: LB

9.14 FORINGSFORSØK PÅ KRABBE
(1.86) [FEEDING OF CRABS]

Gundersen, Kaare R. (Fiskeridirektoratets Havforskningsinstitutt)
Fisken og Havet, No. 2, 14-16 (1970) (In Norwegian; figure and summary in English)

In a study on ways to improve the yield of meat, crabs (Cancer pagurus) were confined in a basin and fed artificially for 3 mo. The results show that artificial feeding is possible. The percent of brown body meat increased more in females than in males. [1 figure] LB

8.59 TABLES FOR THE IDENTIFICATION OF CAROTENOID PIGMENTS
(0.30)

Foppen, Fredrik K. (Istituto Superiore di Sanità, Laboratori di Chimica Biologica, Rome, Italy)
Chromatographic Reviews 14, No. 3, 134-298 (August 1971)

This paper is a review of the literature on carotenoid pigments; it consists of a collection of physicochemical data about these compounds.
[2 figures, 232 tables, 260 references] FTP

8.50 DETERMINATION AND COMPOSITION OF FISH EXTRACTS
(7.50)(6.190)

Baltes, Werner (Inst. Org. Chem. Biochem., Univ. Hamburg, Hamburg, Germany)
Chemical Abstracts 75, No. 9, 62289h (August 30, 1971)

9.16 BREEDING EXPERIMENTS OF A MARINE LITTORAL COPEPOD
(9.14)(1.89) TIGRIOPUS JAPONICUS MORI

Takano, Hideaki
Bulletin of the Tokai Regional Fisheries Research Laboratory No. 64, 71-80 (January 1971)

This experiment was conducted in an effort to find another source of food, besides Artemia salina, for cultivated marine animals. Tigriopus japonicus, a harpacticoid copepod, was chosen because it is one of the fastest growing of the microcrustaceans living in brackish and marine environments.

First, the best food for inducing the copepod to produce the greatest number of broods in the shortest time was determined. A 1:1 mixture of wheat flour and soya flour maintained at least 12 successive generations under nonsterile conditions; however, a mixture of cereal flour and cultivated microalgae seemed to be the best food over a long period of time. The shortest time between generations was 12 days; the usual number of nauplii in a brood was between 20 and 35; and the greatest number of broods produced by a female was 11.

Then the acceptability of the copepod as food was tested on arrow worms. The results were similar to those of Ito (1970), who found that blue goby larvae (3 mm. long) would not eat adult T. japonicus because of their large size and tough body shells. He therefore suggests that only the nauplii be fed to small-sized fish larvae. [3 tables, 23 references] LB

9.19 EGGSHELL THINNING IN JAPANESE QUAIL FED MERCURIC CHLORIDE

Stoewsand, Gilbert S., Judy L. Anderson (Department of Food Science and Technology, New York State Agricultural Experiment Station, Cornell University, Geneva, N.Y. 14456), and Walter H. Gutenmann, Carl A. Bache, and Donald J. Lisk (Department of Entomology, New York State College of Agriculture, Cornell University, Ithaca, N.Y. 14850)
Science 173, No. 3001, 1030-1031 (September 10, 1971)

Japanese quail (Coturnix coturnix japonica) fed 1 to 8 parts of mercury (added to the diet as $HgCl_2$) per million for 10 weeks produced eggs with thinned shells. The total amounts of mercury in the tissues of quail were proportional to the dosage given and were higher in the males than in the females. Methylmercury was not present in the muscle, kidney, eggs, or feathers of the quails fed the mercuric chloride. [1 figure, 1 table, 15 references] FTP

9.19 ESTUARINE POLLUTION: THE DETERIORATION OF THE OYSTER INDUSTRY IN NORTH CAROLINA (9.3)

Moon, Travis W., and William M. Trotz
North Carolina Law Review 49, Special Issue, 921-943 (August 1971)

This comment examines the recent deterioration of the oyster industry of North Carolina and the remedies available against those who have contributed to the deterioration. [115 footnotes] FTP

9.19 MERCURY IN THE ENVIRONMENT: A SUMMARY OF INFORMATION PERTINENT TO THE DISTRIBUTION OF MERCURY IN THE SOUTHERN CALIFORNIA BIGHT

Young, David R. (Southern California Coastal Water Research Project, 1100 Glendon Ave., Los Angeles, Calif. 90024)
Southern California Coastal Water Research Project Report, 31 pp. (November 1971) Price $1.70.

Mercury is introduced into southern California coastal waters through various means--both natural and man-related, and relatively little is known of its fate in the marine environment or its possible effects on the public health or the health of local marine organisms. A review of published and unpublished data on mercury in marine and freshwater reservoirs revealed that there have been, to date, only a few studies dealing specifically with the distribution of mercury in the Southern California Bight; therefore, average background levels of mercury in the Bight can only be roughly estimated at present. Existing data on mercury input to the Bight through sewage effluent, surface runoff, aerial fallout, and advection via ocean currents are supplemented with extrapolations of global mercury input estimates and used to calculate the order of magnitude and relative importance of each of these sources: The calculations indicate that the advective input is the major source of mercury to the Bight; however, advection is also probably the primary means of output, and the net effect of the total process is yet to be determined. Chemical data, obtained primarily from studies of freshwater systems, provide insight into the ways in which inorganic mercury may be transformed into more toxic organic forms and taken up by the biota. Parallel

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9.19 THE NATION'S RIVERS

Wolman, M. Gordon (Johns Hopkins University, Baltimore, Md. 21218)
Science 174, No. 4012, 905-918 (November 26, 1971)

Problems encountered in appraising trends in the quality of waters and rivers are discussed. The author states that the few data available and the small number of investigators concerned with evaluating trends in the quality of the rivers of the United States suggest three specific conclusions: (1) None of the programs was designed specifically to measure the quality of the rivers or the river environment. The sampling programs were intended to emphasize the measurement of specific characteristics related to the use of water by industry and municipalities. Few of the observational programs combined the hydrology with measurements of water quality, river characteristics, and biology. This lack of coordinate observations makes long-term comparisons almost impossible. (2) Substitute measurements for water quality and easily measured parameters may shed little light on the dynamics of the processes active in river systems. Such measures are of limited use in estimating the likelihood of reversing specific observed trends in the absence of a knowledge of their causes. Therefore, more attention must be given to measuring parameters related to models of river behavior and to estimating inputs based on budgets of materials derived from industrial outputs and land use. (3) Because of the difficulty of observation, too little attention has been given to the variability of biological activity and physical aspects associated with natural variations and cycles in rivers. Many measurements on biological effects are carried out during low and summer flows when measurements are easy. Also, one common trend in river management is the progressive regulation of flow through the

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9.19 REGENERATIVE FUNCTIONS AND MICROBIAL ECOLOGY OF CORAL REEFS
(7.43)(1.9)

Di Salvio, Louis H., et al. (Naval Biomedical Research Laboratory, University of California, Berkeley, Calif. 94720)
Canadian Journal of Microbiology 17, No. 8, 1081-1100 (August 1971)

The regeneration function as used here is the sum of the respiratory and the mineralization processes that lead to the release of small molecules and compounds potentially available for recycling into the productive processes of the ecosystem.

I. "Assays for Microbial Population," Louis H. Di Salvio and K. Gundersen (Department of Microbiology, University of Hawaii, Honolulu, Hawaii 96822), pp. 1081-1089.

In this part of the report, the authors report "total" counts of hetertrophic bacteria in coral reef regenerative sediments; results of attempts to culture the bacteria on solidified media containing (as energy sources) low-solubility organics that are biochemically representative of the natural products that are likely to occur in reef organic detritus; and a sediment recovery and ashing procedure developed to provide a quantitative basis for comparison of bacterial counts and sediment quantities sampled from different stations. They also propose that the regenerative system of the reef functions like a trickling sewage filter, for it has extensive well-aerated surfaces supporting diverse microbial populations that are adapted to mineralize organic matter. [5 figures, 5 tables, 21 references]

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9.19

providing of storage; such regulation, rather than pollutants alone, may have the most far-reaching effects on the character of many river systems.

Because the demands on the waters of the rivers are increasing, the author suggests that the concept of threshold and irreversibility must be studied (a) on pristine waters to reveal the nature of the initial (biological) changes that take place and (b) on specific rivers where large-scale control or cleanup programs have been started. Observations designed to support the enforcement of standards may not in themselves provide satisfactory measures of thresholds, trends, or reversal of trends. [9 figures, 7 tables, 67 references] FTP

9.19 EUTROPHICATION AND DETERGENT PHOSPHATE

Oba, Kenkichi (Environmental Sanitation Section, Lion Fat and Oil Co., Hirai, Edogawa-ku, Tokyo, Japan), and Shinichi Tomiyama (Lion Fat and Oil Co., Yokoami, Sumida-ku, Tokyo)
Journal of Japan Oil Chemists' Society 20, No. 6, 46-56 [368-378] (June 1971)
[In Japanese]
[5 figures, 4 tables, 98 references]

9.19 (7.43)(1.9)

II. "Oxygen Metabolism in the Regenerative System," Louis H. Di Salvio; pp. 1091-1100.

Oxygen consumption of nonliving coral heads and of sediment suspensions obtained from nonliving coral heads was measured; the diurnal oxygen content of interskeletal waters was compared with that of ambient reef waters; normal sediment metabolism was compared with that of antibiotic-treated sediments; and oxygen debts of waters within inshore reefs were compared with those of offshore reef waters. Because the rate of metabolism in reef regenerative systems is rapid, such unused environmental stresses as excessive siltation or fresh-water influxes may interfere with sediment processing by infaunal reef macroorganisms. Mechanical stress and organic loading (the discharge of bagasse fiber and other sugar wastes over coral reefs is one such example) will similarly disrupt reef regenerative functioning. During periods of oxygen stress, the evolution of H_2S by sulfate reducers drives out motile organisms and poisons sessile ones. Thus a reef is deprived of its sediment-processing mechanism.
[7 figures, 3 tables, 19 references] LB

9.19 TREATMENT OF WASTE WATERS FROM FISH AND MEAT PROCESSING PLANTS

Tsuchiya, Hikoji (Inst. Drain., Organo Co., Ltd., Japan)
Chemical Abstracts 75, No. 6, 40099u (August 9, 1971)

9.19 INFLUENCE OF PESTICIDES ON WATER AND THE HUMAN ENVIRONMENT

Stangenberg, Marian (Wyzsz. Szk. Roln., Wroclaw, Poland)
Chemical Abstracts 74, No. 25, 139883m (June 21, 1971)

9.19 EUTROPHICATION OF LAKE WATER MICROCOSMS: PHOSPHATE VERSUS NONPHOSPHATE DETERGENTS

Mitchell, Dee (Monsanto Co., St. Louis, Mo. 63166)
Science 174, No. 4011, 827-829 (November 19, 1971)

Domestic waste water contains about 10 mg. of total phosphorus per liter; one-half to two-thirds of this amount comes from detergents containing phosphates [C. Sawyer, J. Amer. Water Works Ass. 57, 1431 (1965)]. A question arises, then, would a 50 to 60% reduction in phosphorus concentrations in domestic waste water significantly reduce the eutrophic condition of our lakes? This paper presents experimental evidence that the elimination of phosphates from detergents would not make significant improvement in eutrophic conditions in the lake receiving the resulting waste water effluent.

Using oligotrophic algal microcosms, the author determined experimentally the eutrophication potentials of a phosphate-containing detergent and two phosphate-free detergents. The microcosm algal assay procedure of D. Mitchell and J. Buzzell, Jr. [J. Sanit Eng. Div. Amer. Soc. Civil Eng. 97, 453 (1971)] was used. The ecological significance of the various waste waters was assessed in terms of the resulting algal diversity. The eutrophication potentials of all three detergents were not significantly different. All activated sludge effluents, even those from detergent-free waste water, lowered the algal diversity of the microcosms to about the same extent below that of the lake water controls.
[1 figure, 3 tables, 14 references] FTP

9.19 DISTRIBUTION OF REDUCED INORGANIC COMPOUNDS AND THEIR OXIDATION IN LAKES

Nikaido, Motomu (Biological Institute, Ehime University, Matsuyama, Japan)
Memoirs of the Ehime University, Natural Science, Series B (Biology) 6, No. 3, 27-40 [159-172] (December 1970) (Published by the Ehime University, Matsuyama, Japan)

The author proves that oxygen consumption in the hypolimnion of eutrophic lakes and in streams polluted by organic substances is due not only to the respiration of organisms and the biochemical oxidation of the organic substances but also to the chemical oxidation of such reduced inorganic compounds as ferrous iron, hydrogen sulfide, iron sulfide, and sulfide sulfur. The effect of the physicochemical characteristics of the water (such as temperature, pH, and coexistent substances) on the chemical oxidation processes of these reduced substances will be reported later.
[10 figures, 5 tables, 12 references] LB

9.19

studies on the chemistry of mercury are needed for the marine environment. Recent incidents of human poisonings and environmental damage from mercury in aquatic food webs in Japan, Sweden, and North America emphasize the need for a better understanding of the physiological effects of various mercury compounds; the possible genetic effects of exposure to mercury should also be further investigated.
[12 figures, 9 tables, 57 references] Author's abstract

9.2 (9.6)

MARINE DECISIONS UNDER UNCERTAINTY

Devanney, John W., III (Massachusetts Institute of Technology, Cambridge, Mass. 02139)
Report No. MITSG 71-7, xii + 203 pp. (November 1971) (Published by Cornell Maritime Press, Inc., Cambridge, Md. 21613) $6.50

Few executives face uncertainties of the type and magnitude that the marine investor and operator must face. Yet the systematic treatment of uncertainty has received little attention in marine practice or marine literature. This book attempts to remedy that deficiency.

The first three chapters are addressed primarily to the practicing marine decision maker. They introduce him to the basic elementary concepts of decision making under uncertainty, to Bayesian decision theory, and to the concept of dynamic programming. The final three chapters apply these techniques to a representative spectrum of marine problems that involve a substantial degree of uncertainty. They also provide the theoretical analyst with illustrative examples of some of the more challenging problems the practicing marine decision maker must solve. Chapter 4 focuses on the alternatives open to investors in marine transportation; chapter 5, on marine hardware maintenance problems; and chapter 6, on marine search and exploration problems.
[33 figures, (plus numerous graphic illustrations in the text), 2 tables, 23 references] LB

9.2

AN EXPERIMENTAL STUDY OF SEAFOOD MERCHANDISING STRATEGIES IN A SUPERMARKET

Gillespie, Samuel M., and Stephen M. Loomis (Department of Marketing, Texas A&M University, College Station, Tex. 77840)
Sea Grant Program of Texas A&M University, Report No. TAMU-SG-71-221, viii + 139 pp. (November 1971) (College Station, Tex. 77840)

This research study examines the effects of planned implemented merchandising strategies on the sales and profits of a retail fresh seafood market located within a local Bryan, Texas supermarket. Two major objectives of the study were to determine if:

1. Sales volume and profitability of fresh seafood products may be increased by planned merchandising strategies.
2. The increased sales volume and profitability may be accomplished without taking a disproportionate share of normal supermarket operating funds.

In addition to a period of observation, three planned merchandising strategies were implemented during the study; a low cost merchandising plan involving only procedural changes; an average cost merchandising effort involving light promotional expenditures; and a high cost merchandising strategy consisting of heavy promotion of fresh seafood products.

It was shown that each successive experimental merchandising strategy produced greater sales and profits of fresh seafood items. In addition, incremental analysis showed that these increases did not take a disproportionate share of supermarket funds as each successive experimental merchandising effort showed sizeable incremental rates of return.

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9.2 (9.19)

POLLUTION PRICES IN A GENERAL EQUILIBRIUM MODEL

Ruff, Larry E. (Department of Economics, University of California, San Diego, Calif.)
Sea Grant Publication No. 12 (IMR Reference No. 72-3), 25 pp. (May 1970) (Institute of Marine Resources, La Jolla, Calif. 92037)

The analysis of the pollution problem begins with a brief discussion of existing methods of economic decision making and control, upon which most existing and proposed pollution programs are based. It is argued that benefit-cost analysis and direct regulation are totally inadequate tools for the more complex pollution problems. Ultimately, a political-economic process will have to make decisions about pollution policy and great care must be taken in designing this process. It is suggested that an explicit distinction be made between those dicisions which must be made politically and those which are best made by economic calculation, and that institutions be structured accordingly. On the economic side a quasi-market in pollutants is shown to be capable of achieving specified pollution levels "efficiently" in a competitive general equilibrium model, where efficiency is defined in a sense related to, but distinct from, Pareto optimality; and the market "prices" are shown to be estimates of the marginal cost of pollution reduction. The political process can then decide the matters of welfare distribution and desired pollution levels. Finally, the practicality of the price system for pollution control is considered, and it is argued that such a system is probably the best solution for the worst problems. In fact, the more difficult the problem of control, the greater advantage the price system has over its alternatives.
[2 figures, 10 references] Author's introduction reprinted in part

9.19 (9.3)

POLLUTED WATER -- A CHALLENGE TO FORENSIC BIOLOGY

Wilber, Charles G. (Department of Zoology, Colorado State University, Fort Collins, Colo. 80521)
Journal of Forensic Sciences 16, No. 3, 251-268 (July 1971)

Regardless of one's precise definition of the term, the aim of forensic science is toward furthering the objectives of the law. Law concerns itself not only with criminal cases but also with civil matters and with matters of general equity. The view in our present-day society is that law must address itself to problems of overall concern to society at large. The idea of the common good is becoming an increasingly significant factor in litigation, especially in matters concerning the environment. This presentation, given at the Twenty-Third Annual Meeting of the American Academy of Forensic Sciences (held in Phoenix, Ariz., on February 22, 1971) is addressed primarily to problems associated with pollution of the aquatic environment.

Since pollution of natural waters harms the plants and animals that are useful to man, it may harm people and communities--esthetically, economically, and emotionally--and it may threaten human health. Thus, since the legal implications are apparent, forensic scientists must become actively involved in the science of human environmental quality.

In the long-term view, legislation is the only means of making significant advances in the protection and reclamation of man's natural resources. But legislation takes time, and time is running out. Hence the American Trial Lawyer's Association takes the view that the common law is the device that can be used immediately. For example, there is the theory of "nuisance liability" under which a

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9.2 SOME ECONOMIC ASPECTS OF PINK SHRIMP FARMING IN FLORIDA
(9.16)(1.85)

Anderson, Lee G. (Department of Economics, University of Miami, Miami, Fla. 33149), and Durbin C. Tabb (Rosenstiel School of Marine and Atmospheric Science, University of Miami)
University of Miami Sea Grant Program, Contribution No. 1334 (Rosenstiel School of Marine and Atmospheric Science), pp. 113-124 (n.d.) (Reprint)

The authors estimated the possible returns from three sizes of shorefront shrimp farms (100-acre, 500-acre, and 1,000-acre) should each be used to grow bait or food shrimp. Capital costs (pond and hatchery construction and land costs), labor for the hatcheries, and maintenance of both ponds and hatcheries were assumed to be the same for both types of shrimp product. Other operating costs (e.g., labor for the ponds, food for the shrimp, and acquisition of eggs) and revenues were assumed to be different. Tables are given showing capital costs, operating costs, total revenue, and net cash flow over a 16-year period.

Of the six types of shrimp farm analyzed, only the two larger bait-shrimp operations offered any promise of profit; they could be quite profitable if the land-acquisition price were sufficiently low. However, the authors point out, the profit figures tabulated are for gross returns. Taxes are not considered nor are returns from other possible investments evaluated comparatively. If ex-vessel price elasticity of demand for food shrimp estimated in 1970 by the Bureau of Commercial Fisheries were taken into account, the food shrimp operation would appear in an even worse light, particularly should very many large farms begin operating. [Elasticity of demand is the relation between the change in output of a product and the change in price as more units are put on the market.] The authors had no comparable estimate of the price elasticity of demand for bait shrimp.
[6 tables, 2 references] LB

9.19 (9.3)
person can challenge the use of another's land if such use results in harm to those in the vicinity. And there are such novel approaches to legal theory as to claim that one's civil rights are violated because the water available to him is polluted--and even to make the case a class action. Suits of this nature could be brought under the Ninth Amendment, the Fourteenth Amendment, or both. Once the matter is before the courts, the forensic scientist, who is skilled in working with legal counsel, has an important role to play. The average scientist from a university or a research institution has neither the experience nor the orientation to present scientific matters effectively in the courtroom. The forensic scientist then must assume the burden of vigorously supporting the trial lawyer's efforts to resolve the extremely complex biomedical problems of water pollution.

The speaker then illustrates the complexity of the legal questions that can arise by citing actual examples--oil spills, mercury pollution of fish (and the poisonings that ensue from people's eating them), pollution from the radioactive wastes of nuclear power plants, and several types of chemical pollution. And he concludes by stating that until forensic scientists address themselves to these complex and all too often obscure environmental problems, no improvement in the specialized scientific knowledge needed to deal with them can be expected.
[4 figures, 10 references] LB

9.3 RESIDUALS--ENVIRONMENTAL QUALITY MANAGEMENT:
(9.2)(9.19) A FRAMEWORK FOR POLICY ANALYSIS

Loucks, Daniel P. (Environmental Engineering, Cornell University, Ithaca, N.Y.)
Natural Resources Journal 11, No. 3, 547-560 (July 1971)

In this article, the author discusses environmental quality models and their contribution to public policy decisions. [6 footnotes] FTP

9.2 A STUDY OF THE MARKETING CHANNELS FOR FRESH FINFISH IN THE TEXAS FISHING INDUSTRY

Gillespie, Samuel M., and Jon Layne Gregory (Department of Marketing, Texas A&M University, College Station, Tex. 77840)
Sea Grant Program of Texas A&M University, Report No. TAMU-SG-71-220, viii + 152 pp. (September 1971) (College Station, Tex. 77840)

This study is the first organized attempt to describe the distribution channels for finfish species taken from Texas Coastal waters and point out problem areas related to the performance of marketing functions, services, and activities within these channels.

With respect to the retail trade level in Texas, it was shown that restaurants play the most important role in distributing fresh saltwater finfish to ultimate consumers relative to vertically integrated retail markets, independent retailers, and institutions (schools, hospitals, etc.).

Approximately two-thirds of the finfish accounted for in this study was shown to be consumed in the coastal regions (including the Houston metropolitan area), while 15% was consumed in the San Antionio area, 12% in the Austin area, and 7% in the Dallas area. Of the total volume of saltwater finfish accounted for in the study, 15% was distributed out-of-state.

Finally, it was shown that the problem areas afflicting the distribution channels and the entire Texas fishing industry could be categorized into four general areas: (1) difficulty in obtaining sufficient quantities of fresh finfish to satisfy the existing demand, (2) pollution problems, (3) state governmental regulations affecting harvesting of finfish, and (4) business "myopia" and lethargy among firms in the channel of distribution.
[8 figures, 21 tables, appendices] Authors' abstract in part

9.2

In addition to accomplishing the two major objectives, additional conclusions inferred from the analysis of the data were:

1. Fresh seafood products can be promoted with great success.
2. There appeared to be a favorable direct, but not necessarily proportional, relationship between promotion and customer services, and profits.
3. From all evidence, the full potential of the fresh seafood market was not reached.
4. While the full potential of the fresh seafood market was not reached, the effects of diminishing returns were felt.
5. Promotion and customer services were major factors in increasing sales and profits of fresh seafood.
6. While it was difficult to isolate the effects of the payday cycle on sales, it appeared as though payday weeks had little effect upon weekly profits.
7. Weekends remained a strong selling period for fresh seafood.

[23 exhibits (diagrams and tables), and an appendix consisting of 12 tables]
Authors' abstract

9.2 SOLID RESIDUAL MANAGEMENT: SOME ECONOMIC CONSIDERATIONS
(9.3)(9.19)

Spofford, Walter O., Jr. (Resources of the Future, Inc., Washington, D.C.)
Natural Resources Journal 11, No. 3, 561-589 (July 1971)

This article discusses the role that materials reuse might play in reducing residuals handling and disposal costs, and in improving environmental quality.
[56 footnotes] FTP

9.3 THE DRAFT UNITED NATIONS CONVENTIONS ON THE INTERNATIONAL SEABED AREA: BACKGROUND, DESCRIPTION, AND SOME PRELIMINARY THOUGHTS

Knight, H. Gary (Louisiana State University Law Center, Baton Rouge, La.)
San Diego Law Review 8, No. 3, 459-550 (May 1971)

This paper raises certain issues involved in the concepts embodied in the Draft Convention [Draft U.N. Convention of the International Seabed Area: U.S. Working Paper Submitted to U.N. Seabeds Committee, 63 Department of State Bulletin 209 (1970)] and indicates why the document is a good one for the Nation, the international community, and the offshore mining industry. One part of the paper deals with background material relevant to aspects of marine geology and marine resources law, a short history of the seabed question from August 1967 to date, the genesis and substance of the Nixon statement of May 23, 1970 [Nixon, United States Policy for the Seabed, 9 International Legal Materials 807 (1970), 62 Department of State Bulletin 737 (1970)], and the Draft Convention. Another part of the article summarizes the salient provisions of the Draft Convention and makes some preliminary analytical comments concerning several of the provisions. The final part contains a brief resume of national, international, and industry interests served by the document. [240 footnotes] FTP

9.3 AN INTERNATIONAL REGIME FOR THE DEEP SEABED: DEVELOPING LAW OR DEVELOPING ANARCHY?

Pardo, Arvid (Permanent Representative of Malta to the United Nations)
Texas International Law Forum 5, No. 2, 204-217 (Winter 1969)

The author believes that the establishment of an effective international regime for the seabed and ocean floor beyond national jurisdiction is the only way to avoid the apparently inevitable danger that will arise if the present uncertain status of the seabed continues. He states that there are now no legal norms nor are there indications of any developing international consensus that can effectively restrict the extension of national jurisdiction over the seabed beyond the geophysical Continental Shelf. Three basic, interconnected questions must be answered if a legal regime based on the common interests of man is to be established. These are: (1) What are the outer limits of the Continental Shelf subject to the sovereignty of the coastal state for the purpose of exploration and exploitation of its natural resources? (2) What legal concept and principles should be applied to the area of the seabed beyond the legal Continental Shelf? (3) What are the nature and the implications for states of the legal regime that should be adopted for the seabed beyond natural jurisdiction? The author discusses the general framework within which these answers may be sought. [10 footnotes] FTP

9.3 FORECASTING SCIENTIFIC AND TECHNICAL PROGRESS

Kurakov, I. G.
Edited machine trans. of Voprosy Filosofii (USSR) 22, No. 10, 21-35 (1968) by Bernard L. Tauber.
Report No. FTD-MT-24-234-70, 31 pp. (January 29, 1971) (Foreign Technology Div., Wright-Patterson AFB, Ohio) Available from the National Technical Information Service, Operations Division, Springfield, Va. 22151. Order No. AD-726 589, PC$3.00; MF$0.95.
Government Research Announcements 71, No. 17, 28 (September 10, 1971)

The article seeks to analyze the relation between an increase in the level of industrial knowledge and an increase in the productivity of labor. By means of formulas and graphs, it attempts to determine that portion of the increase in production funds which should be expended on the improvement of industrial knowledge. Comparisons with similar expenditures in non-communist countries are made. The ultimate goal is the development of an analytical tool for forecasting industrial growth. (Author) Reprinted

9.3 ENFORCING ENVIRONMENTAL POLICY: THE ENVIRONMENTAL OMBUDSMAN (9.19)

Ege, Karl J.
Cornell Law Review 56, No. 5, 847-863 (May 1971)

The author proposes the creation of an Office of Environmental Ombudsman in the legislative branch of government as a significant step towards an effective program of environmental administration. The Council on Environmental Quality would assist and advise the President through investigation, review, and appraisal of programs of the federal government; the Environmental Protection Agency would provide operating control of its standard-setting and enforcement programs; and the Environmental Ombudsman would conduct investigations (on his own initiative or upon request of private citizens or members of Congress) to ensure agency compliance with the National Environmental Policy Act.
[76 footnotes] FTP

9.3 INTERNATIONAL LAW AND THE DELIMITATION OF BAYS

Yates, George Talmadge, III (School of Law, University of Virginia, Charlottesville, Va. 22903)
North Carolina Law Review 49, Special Issue, 943-963 (August 1971)

The author discusses the principles of international law employed in delimiting bays from territorial waters and the high seas. [80 footnotes] FTP

9.3 THE AMERICAN LEGAL SYSTEM AND ENVIRONMENTAL POLLUTION
(9.19)

Juergensmeyer, Julian Conrad (Tulane University, New Orleans, La.)
University of Florida Law Review 23, No. 3, 439-450 (Spring 1971)

The author concludes that only when law-oriented environmentalists have effected four needed changes in our political-legal system will the American legal system be able to successfully implement any societal resolution that environmental control is to be given sufficient priority to solve the present crisis and to prevent its recurrence. The four needed changes are (1) elevate the concept of priority for environmental protection to the level now occupied by civil rights, religious freedom, freedom of speech, and the like; (2) remove the stumbling blocks thrown in the path of progress in environment control by outdated concepts of federalism; (3) the concept of absolute private ownership must yield to a full recognition of ownership as a social function; and (3) the ultimate and necessarily concomitant objective of any program for protection of the environment from pollution is the establishment of resource allocation and management programs.
[54 footnotes] FTP

9.19 DETERGENT SITUATION IN ENVIRONMENTAL HYGIENE

Tomiyama, Shinichi, and Kenkichi Oba (Lion Fat and Oil Co., Yokoami, Sumida-ku, Tokyo, Japan)
Journal of Japan Oil Chemists' Society 20, No. 1, 46-56 (January 1971)
[In Japanese]
[5 figures, 9 tables, 130 references]

9.3 REGISTRATION OF HERBICIDES FOR AQUATIC USE
(9.16)(9.19)

Cummings, J. C. (Food and Drug Administration, Division of Food Chemistry and Technology, Rockville, Md.)
Paper presented at the North East Weed Control Conference, New York, N.Y., 8-10 January 1969. Available from the National Technical Information Services, Operations Division, Springfield, Va. 22151. Order No. AD-726 028. PC$3.00; MF$0.95.
Government Research Announcements 71, No. 16, 51 (August 25, 1971)

Toxicology data including 90-day feeding for two species of mammals are required for registration of each aquatic herbicide. Residue data for irrigated crops, meat, poultry, milk and eggs, fish and shellfish and potable water are also required for each registered use. (Author) Reprinted

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9.3 MARITIME JURISDICTION OVER FISHERY RESOURCES

Davis, Gilbert Thomas (University of North Carolina)
Vanderbilt International 4, No. 2, 109-119 (Spring 1971)

This note was prepared by the student author and was delivered at the Southeastern Regional meeting of the American Society of International Law at the University of North Carolina on February 27, 1971. The article discusses the United States' approaches to maritime jurisdiction over fishery resources and the domestic policy regarding maritime jurisdiction.
[35 footnotes] FTP

9.3 STATE POWER AND THE INDIAN TREATY RIGHT TO FISH

Aschenbrenner, Peter J.
California Law Review 59, No. 2, 485-524 (March 1971)

Part 1 of this comment explores the original purpose of the fishing provision of the treaties [10] concluded by the Federal Government with Indian tribes of the Northwest. [The treaties ... assured each tribe the right to fish outside its reservation at all "usual and accustomed" places.] Further, this part discusses current congressional concern over its [treaty fishing provision] enforcement and the Supreme Court's response to state reluctance to recognize the fishing rights secured by the provision. Part 2 explores the relationship between the state governments and the Indian treaty fishermen. In the final part, Part 3, the author analyzes the problems of judicial posture inherent in administering the fairest solution to the fishing rights problem.
[222 footnotes] FTP

9.3 PAST, PRESENT AND FUTURE DEVELOPMENT OF THE CUSTOMARY INTERNATIONAL LAW OF THE SEA AND DEEP SEABED (9.2)

Laylin, John G.
International Lawyer 5, No. 3, 442-451 (July 1971)

The author proposes a method for protection of investors in a deep-seabed project pending development of an international regime for the exploitation of the seabed resources in the area seaward of the 200-meter isobath.
[17 footnotes] FTP

9.3 THE UN AND THE LAW OF THE SEA: PROSPECTS FOR THE UNITED STATES SEABEDS TREATY

Gerstle, Margaret Lynch (Assistant to Senator Clairborne Pell, Washington, D.C.)
San Diego Law Review 8, No. 3, 573-583 (May 1971)

The author states that the world community has now before it one concrete opportunity [the proposed 1973 Law of the Sea Conference] to create a new international system to deal with one of the many problems of the future whose global dimensions no national power can confine. Furthermore, she states, 'Like the internationalization of atomic power, the concept of management of resources of the seabeds as the "common heritage of mankind" is an idea whose time has come, and may too soon become an idea whose time has passed.'
[3 footnotes] FTP

9.3 FREEZING THE BOUNDARY DIVIDING FEDERAL AND STATE INTERESTS IN OFFSHORE SUBMERGED LANDS

Wulf, Norman A. (International Law Division, Office of the Judge Advocate General of the Navy)
San Diego Law Review 8, No. 3, 584-605 (May 1971)

Regardless of how the seabed is divided between national and international claimants, the United States will still have the problem of dividing its portion of the seabed between the federal government and the states. The author examines the federal-state submerged land controversy and explores the international and domestic implications of establishing a fixed boundary.
[99 footnotes] FTP

9.3 VIENNA CONVENTION ON THE LAW OF TREATIES TRANSMITTED TO THE SENATE

Anonymous
Department of State Bulletin 65, No. 1694, 684-689 (December 13, 1971)

Reprinted here are the texts of President Richard Nixon's message to the Senate of the United States transmitting, for the advice and consent of the Senate to ratification, the Vienna Convention on the Law of Treaties signed for the United States on April 24, 1970. Also reprinted is Secretary of State William P. Roger's report to the President. The Convention sets forth a generally agreed body of rules to govern all aspects of treaty making and treaty observance. The Convention consists of eight parts; procedures for handling most important disputes are contained in the Annex. Secretary Roger's report gives the major provisions of the Convention. [2 footnotes] FTP

9.4 NATIONAL MARINE FISHERIES SERVICE FEDERAL AID PROGRAM ACTIVITIES 1971

Anonymous
NOAA, National Marine Fisheries Service, Division of Federal Aid Staff, Washington, D.C., 138 pp. (July 1971). Order No. COM-71-00942. Available from the National Technical Information Service, U.S. Department of Commerce, Sills Bldg., Springfield, Va. 22151.
NOAA Publications Announcement No. 71-77, 8, Item 71-17-16-16 (October 1971)

This is the fourth of a series of annual publications on the Federal Aid Program of the National Marine Fisheries Service (formerly Bureau of Commercial Fisheries). This report is intended to provide State program coordinators and administrators, Federal people, project personnel, and others concerned with research, development, conservation, and management of our fishery resources with a convenient reference to the National Marine Fisheries Service grant-in-aid program. This publication will also facilitate planning, coordination, and integration of State, Federal, and other activities concerned with the fishery resources. (Author text, extract by SK) Reprinted

9.6 FURTHER STUDIES OF ALASKA SOCKEYE SALMON
(1.32, 9.12)

Burgner, Robert L. (ed.)
Further Studies of Alaska Sockeye Salmon, v + 267 pp., illus. (University of Washington: Seattle [1968]). $3.60 paper.
Reviewed by John W. Emig
California Fish and Game 55, No. 3, 255-256 (July 1969)

Six reports that are essentially separate entities constitute this second volume of a series devoted to work done by the University of Washington's Fisheries Research Institute. Their titles are as follows:

"A Comparison of the Food of Sockeye Salmon Fry and Threespine Sticklebacks in the Wood River Lakes,"

"Distribution and Growth of Sockeye Salmon Fry in Lake Aleknagik, Alaska, During the Summer of 1962,"

"Identification of Adult Sockeye Salmon Groups in the Chignik River System by Lacustrine Scale Measurement, Time of Entry, and Time and Location of Spawning,"

"On the Use of Otoliths of Sockeye Salmon for Age Determination,"

"Physical Environment and Egg Development in a Mainland Beach Area and an Island Beach Area of Iliamna Lake,"

(over)

9.6 AQUATIC SCIENCES & FISHERIES ABSTRACTS

Akyüz, E. F. (Fishery Resources Division, FAO) (editor in chief)
Food and Agricultural Organization of the United Nations, Rome, Italy

This new abstract journal is compiled by FAO with the collaboration of the Institut für Dokumentationswesen, Frankfurt; Bundesforschungsanstalt für Fischerei, Hamburg; INRA, Département d'Hydrobiologie, Biarritz; and Information Retrieval Limited, London. Each month some 1,200 abstracts (drawn from 1,500 primary aquatic science journals and 1,500 fringe journals containing articles that concern living aquatic resources in their environment and methods of research applicable to these resources) will be published. Articles on fishing craft, gear, and methods, and on primary fishing industries generally, will be included if their content relates to appraisal and use of the resources. The abstracts will be in English, the original title plus the English translation being given for non-English papers, and will be arranged in broad subject categories (see the back of the card). Author, geographic, and taxonomic (alphabetical) indexes will be compiled monthly, and subject indexes at least annually. Since the journal is entirely computer oriented, all data will be computer retrievable. Zentralstelle für Maschinelle Dokumentation, in Frankfurt, is developing a completely mechanized storage and retrieval system that is planned to go into operation in 1973.

Volume 1 of Aquatic Sciences & Fisheries Abstracts covers the period from July to December 1971; it costs $77.50. Volume 2 will cover the period from January to December 1972; it costs $175.00. Orders should be sent to Circulation Manager, Information Retrieval Ltd., 38 Chancery Lane, London WC2A 1EL, England.

Subject categories for the arrangement of abstracts are as follows:

(over)

9.4
(1.01111) FISHERIES ONE OF SIX SERVICES IN NEW ENVIRONMENT DEPARTMENT

Anonymous
Western Fisheries 82, No. 6, 16, 18, 20 (September 1971)

Canada's new Fisheries Service combinesthe former Fisheries Service of the Department of Fisheries and Forestry and the Fisheries Research Board, bringing together under one head the operational and the research sides of the fisheries operation. The Fisheries Service; the Atmospheric Environment Service; the Lands, Forests and Wildlife Service; the Water Management Service; the Environmental Protection Service; and the Finance and Administration Service constitute Canada's new Department of Environment. An assistant deputy minister heads each of the services. [6 photographs, 1 organization chart]
LB

9.3
(9.19) POLLUTION CONTROL: WHY NOT COST ALLOCATION

Woodruff, M. G., III (Drake University Law School, Des Moines, Iowa 50311)
Drake Law Review 21, No. 1, 133-152 (September 1971)

The author analyzes the various federal and state laws dealing with the control of pollution, discusses their effectiveness, and points out trends that reveal strengths or weaknesses in environmental control. First, he describes briefly the water and air pollution problems. In conclusion, he suggests that a simulation model is the key to determining damages in pollution cases, and it should therefore be implemented by the appropriate governmental body. The pollution simulation model could be an effective tool in the elimination of many instances of air pollution because it would allow individual decisions on individual cases. The nature of the simulation model enables the calculation of specific damages from fixed-point polluters. [89 footnotes]
FTP

9.6

General [Bibliographies, check lists, col--ctions, cruise reports, etc.]
Physical & chemical oceanography [General; Physical; Chemical (see also Ecology: Productivity); Submarine topography]
Physical & chemical limnology [General; Physical; Chemical (see also Ecology: Productivity); Underwater topography]
Biology [General; Morphology & anatomy; Physiology & biochemistry; Life histories, reproduction & development; Taxonomy, systematics & nomenclature; Genetics (all subdivided into: Bacteria, viruses & fungi; Algae & aquatic plants; Arthropods; Mollusca; Other invertebrate phyla; Pisces; Other chordata)
Ecology [General--Freshwater, Brackish, Marine; Distribution--Freshwater, Brackish, Marine; Migrations, movements & rhythms; Food & feeding; Associations (see also Diseases); Behaviour; Population studies; Evolution & selection; Methods; Plankton--General, Nannoplankton, Phytoplankton, Zooplankton; Productivity]
Pollution [General; Freshwater; Brackish & marine]
Diseases (see also Ecology: Associations) [General; Toxins]
Economic aspects [Fisheries--General, Gear & equipment, Aquaculture, Fish technology, Statistical returns; Biological & chemical control (see also Ecology: Associations); Fouling & boring organisms]
LB

9.6
(3.2380) 'PROGRESS IN ORGANIC COATINGS'

Anonymous
Chemistry and Industry No. 31, 875 (July 31, 1971)

Elsevier Sequoia SA (P.O. Box 851, 1001-Lausanne, Switzerland), a member of Associated Scientific Publishers, has started issuing a new review journal, "Progress in Organic Coatings." Its purpose is to summarize and analyze the progress in and the current state of knowledge about organic coatings and related materials (their chemical, physical, and technological properties; problems associated with and their testing). Among the topics covered in the first volume are adhesion test methods and methods of preparation; their manufacture and application; their performance; fatigue, permeability, corrosion resistance, deposition of pigment surfaces, wetting, filming, and drying of coatings; and various defects associated with these properties. The reviewer suggests that the methods and results presented here should be useful for developing research and management programs for other species.
[Abstracter: L. Baldwin]

9.6 (1.32)(9.12)

"Surveys of Sockeye Salmon Spawning Populations in the Nushagak District, Bristol Bay, Alaska, 1946-1958."

Each is accompanied by an impressive number of figures, tables, and references. The reviewer suggests that the methods and results presented here should be useful for developing research and management programs for other species.
[Abstracter: L. Baldwin]

9.3 LATIN AMERICAN COUNTRIES FACING THE PROBLEM OF TERRITORIAL WATERS

Santa-Pinter, J. J. (University of Puerto Rico, Cayey Campus, Puerto Rico)
San Diego Law Review 8, No. 3, 606-620 (May 1971)

The purpose of this article is to present relative to the problem of territorial waters: (1) the stands currently maintained by the Latin American countries, (2) Latin American political criteria (as laid down in public documents and in multilateral Declarations, and as practiced internationally), and (3) the collective Latin American legal criteria.
[57 footnotes]
FTP

0.8 (9.11) THE OCEAN -- AN ENGINEER'S CHALLENGE

Jolliff, James V. (Commander, U.S. Navy)
Naval Engineers Journal 83, No. 5, 61-75 (October 1971) (American Society of Naval Engineers, Inc., 1012 Fourteenth St., N.W., Washington, D.C. 20005)

The goals of the ocean engineer are:

1. The scientific study of the world ocean.
2. The development of basic technology for furthering man's extension into the ocean technologies.
3. Specific task accomplishments (e.g. recovering ocean minerals, countering corrosion, ...)
4. Utilizing the ocean and its resources for purposes of desalinization, mineral extraction, recreational park development, aquaculture, advanced commercial fishery development, ...

[11 figures, 11 references] FTP

6.54 (9.2) THE POTENTIAL, THE PROBLEMS, AND THE STATUS OF USING PROTEINS OF AQUATIC ORIGIN AS HUMAN FOOD

Pariser, E. R. (Department of Nutrition and Food Science and the Education Research Center, Massachusetts Institute of Technology, Cambridge, Mass. 02139)
Food Technology 25, No. 11, 88-90, 92, 94-96, 98, 100 (November 1971)

The author discusses the United States' approach to the use of aquatic sources of protein in contrast to the approach of other countries.
[6 illustrations, 33 references] FTP

6.54 (2.06) FISH WASTE RECOVERY

Tomita, T. (pat.)
Japanese Patent 17935/71
Food Technology 25, No. 11, 118 (November 1971)

Fish waste is washed, then cooked under pressure. The cooked material is ground, and the ground product is mixed with spices and shaped into the desired form. FTP

7.8 (8.8) ANALYTICAL EVALUATION OF FOOD QUALITY

Reymond, Dominique (Physical, Chemical, and Mathematical Services, Research Laboratories, Nestle Products Technical Assistance Co., Ltd., Vevey, Switzerland)
Food Technology 25, No. 11, 78-80, 82 (November 1971)

Variations in processing techniques can cause variations in flavor quality (distribution and content of flavor components) in foodstuffs. Enrichment techniques (cold trapping, steam distillation under reduced pressure, and solvent extraction) can be used to concentrate volatile flavor components and these components can be analyzed by such analytical techniques as ultraviolet absorption spectroscopy and gas chromatography. The author describes how these techniques can be used in the processing of milk, coffee, tea, cocoa butter, tomato puree, and frozen peas in order to assure optimum quality of these foods.
[6 figures, 11 references] FTP

9.19 (0.34)(6.39) ALGAL CANCER AND CAUSAL SUBSTANCES IN WASTES FROM THE COAL CHEMICAL INDUSTRY

Ishio, S., T. Yano, and H. Nakagawa (Department of Fisheries Chemistry, Kyushu University, Fukuoka-shi, Fukuoka-ken, Japan)
Presented at the 5th International Water Pollution Research Conference, July-August 1970, III-18/1 to III-18/8
In Contributions From the Department of Fisheries and the Fishery Research Laboratory, Kyushu University, No. 16 (1970)

Porphyra tenera, a favorite food of the Japanese, is cultivated extensively in the coastal waters of Kyushu Island. However, it will not grow in waters near the mouth of the Ohmuta, which discharges wastes from the coal chemical industry. Algae as far as 4 km. from the mouth exhibit the same cancerous condition as that induced by X-ray irradiation or by exposure to water containing such carcinogenic compounds as nitrogen mustard. In this study, the authors identify the substances that cause cancer in the alga exposed to waters from the Ohmuta.

Carcinogenic compounds were extracted with acetone from the bottom mud of the waters polluted by wastes from the coal chemical industry. The extracts were separated into bases, acids, and neutrals, the most intensively carcinogenic being the last. These neutral fractions gave two carcinogenic compounds; one was benzanthrone and the other a new hydrocarbon with the molecular formula $C_{25}H_{14}$. All leaves of P. tenera exposed to 0.2 p.p.m. benzanthrone at 10° C. developed cancer within 40 days. The origin of both compounds was traced to a certain synthetic process at a dye factory.
[7 figures, 1 table, 13 references] LB

Subject	Page	Code
AGENCIES		
National Marine Fisheries Service Federal Aid Program Activities 1971	23	9.4
Fisheries One of Six Services in New Environment Department	24	9.4
ANALYSIS		
Simultaneous Determination of Fat, Moisture, Defatted Dry Matter and Ash in Meat, Fish and Biological Materials	13	7.0
Three-Dimensional Structure Identified From Single Sections	13	7.0
ANALYSIS, INORGANIC		
Determination of Chromium in Plants and Other Biological Materials	14	7.42
Hyperfine Zeeman Effect Atomic Absorption Spectrometer for Mercury	14	7.42
ANALYSIS, ORGANIC		
The Conversion of 2,4-Dinitrophenylhydrazine Derivatives of Monocarbonyls to Ethylenethioacetals and Ethylenethioketals for Analysis by Gas Liquid Chromatography	1	0.34
Activation Analysis of Trace Elements in Lipids With Emphasis on Marine Oils	10	4.11
Automatic Colorimetric Determination of N-Nitroso Compounds	13	7.590
The Detection and Estimation of Trace Amounts of N-Nitrosamines in a Food Matrix	14	7.599
ANTIOXIDANTS -- APPLICATION		
Fish Preservation (pat.)	11	4.61
AQUACULTURE		
Studies on the Biomass of a Crab, Eriocheir sinensis and Environmental Factors in Its Habitat	16	9.16
AQUACULTURE -- FEEDING AND NUTRITION OF FISH		
[Feeding of Crabs]	16	9.14
AQUACULTURE -- REARING OF FISH		
Breeding Experiments of a Marine Littoral Copepod Tigriopus japonicus Mori	16	9.16
Hatchery for Brine Shrimp Eggs or the Like (pat.)	16	9.16
AUTHOR INDEX	28	
BACTERIOLOGY		
Bacteriophages of Clostridium botulinum and Closely Related Organisms	2	0.5
Isolation of Psychrophilic Bacteriophage-Host Systems From Refrigerated Food Products	2	0.5
Modified Selective and Differential Isolation Medium for Vibrio parahaemolyticus	3	0.5
Studies on the Radioresistance of Bacillus Spores. Part I. Comparative Studies on the Radioresistance and Chemical Composition of Bacillus Spores	3	0.5
Cultural Estimation of Yeasts on Seaweeds	4	0.5
Effects of Hydrostatic Pressure and Temperature on the Uptake and Respiration of Amino Acids by a Facultatively Psychrophilic Marine Bacterium	4	0.5
Studies on the Fermentation of Petrochemicals (I) Taxonomic on Arthrobacter sp. Isolated From Soil	4	0.5
Pond Trout as Carriers of Clostridium botulinum and Cause of Botulism. 2. Materials and Methods for a Particular Investigation	5	2.05
Tank Trout as Carriers of Clostridium botulinum and the Cause of Botulism. 3. Detection of Clostridium botulinum Type E in a Tank Fish Farm and in Fresh and Smoked Trout From Various Sources	5	2.05
Antigenic Schema and Epidemiology of Vibrio parahaemolyticus	6	2.05
Food Poisoning and Salmonella Infections in England and Wales, 1968	6	2.05
The Rapid Detection and Determination of Sparse Bacterial Populations With Radioactively Labelled Homologous Antibodies	13	7.86
BIOCHEMISTRY		
Racemization of Amino Acids in Marine Sediments	1	0.322
Fluorescent Analogs of Insecticides and Synergists. Synthesis and Reactions of Active-Site-Directed Fluorescent Probes	2	0.35
BIOCHEMISTRY OF FISH		
Thermal Compensation in the Stomach of the Brook Trout (Salvelinus fontinalis Mitchell)	15	9.13
Seasonal Variations in the Cyanophils and the Gonadotropic Potency of the Pituitary in Relation to Gonadal Activity in the Catfish, Mystus vittatus	15	9.13
BOOKS		
SOS/70 Proceedings -- Now Available	5	0.6
Book Chat	15	9.16
FRESH FISH -- PROCESSING		
Fish Skinning Device (pat.)	5	2.3
Continuous Cooker (pat.)	6	2.3
Shaping of Foodstuffs (pat.)	6	2.3
Bonito Processing (pat.)	7	2.3
Scallop Processing (pat.)	7	2.3
FROZEN FISH -- PROCESSING		
Freezing of Sardines To Be Canned With Oil	7	3.234
INTERNATIONAL AFFAIRS		
The Draft United Nations Conventions on the International Seabed Area: Background, Description, and Some Preliminary Thoughts	21	9.3
The UN and the Law of the Sea: Prospects for the United States Seabed Treaty	22	9.3
Vienna Convention on the Law of Treaties Transmitted to the Senate	23	9.3
Latin American Countries Facing the Problem of Territorial Waters	24	9.3
JOURNALS		
Aquatic Science & Fisheries Abstracts	23	9.6
LAW, INTERNATIONAL		
International Law and the Delimitation of Bays	21	9.3
An International Regime for the Deep Seabed: Developing Law or Developing Anarchy?	21	9.3
Maritime Jurisdiction Over Fishery Resources	22	9.3
Past, Present and Future Development of the Customary International Law of the Sea and Deep Seabed	22	9.3
LAW, MARINE		
Freezing the Boundary Dividing Federal and State Interests in Offshore Submerged Lands	22	9.3
MARKETING		
An Experimental Study of Seafood Merchandising Strategies in a Supermarket	19	9.2
A Study of the Marketing Channels for Fresh Finfish in the Texas Fishing Industry	20	9.2
NEW PRODUCTS -- FISH		
Gelled Fish Product (pat.)	5	2.06
Frozen Fish Product (pat.)	7	3.237
Imitation Meat Extract (pat.)	14	6.54
Improvements in and Relating to Edible Materials (pat.)	14	6.54
NUTRITION		
Metabolism of Heat-Damaged Proteins in the Rat. Influence of Heat Damage on the Excretion of Amino Acids and Peptides in the Urine	3	0.7
Zinc Homeostasis During Pregnancy	4	0.7
OCEAN ENGINEERING		
Oceanographic Observation Platform (pat.)	5	2.145
The Ocean -- An Engineer's Challenge	25	0.8
OILS -- OXIDATION		
Autoxidation and Antioxidants	9	4.60
Oxidative Spoilage and Hydrogenizability of Nutritive Whale Fats	10	4.21
OXIDATION		
Lipid Oxidation in Meat and Meat Products -- A Review	9	4.5
Catalysts of Lipid Peroxidation in Meats	10	4.5
Metal-Catalyzed Lipid Oxidation and Changes of Proteins of Fish	10	4.5
Fluorescent Products of Lipid Peroxidation of Mitochrondria and Microsomes	11	4.5
Metal-Catalyzed Oxidation in the Presence of Water in Foods	12	4.5
PACKAGING		
Improved Film Lamination, Package Formed Therewith and Method of Producing Same (pat.)	8	3.2382
Packaging Materials: The Inter-Relationship Between the Micro-Climate Within the Package, Shelf Life and Quality	8	3.2382
Ultrasonics Welding of Polyethylene Inserts Filled With Fish Products	8	3.2386
PASTEURIZATION		
Process for Pasteurizing and Sealing Oysters (pat.)	7	3.15
PICKLED FISH		
Cuttlefish Processing (pat.)	9	3.8
PLANTS, AQUATIC		
Periodate Oxidation of the Insoluble Residue After Severe Extraction of Some Marine Algae	12	6.32
PLANTS, AQUATIC -- ANALYSIS		
Antimicrobial Substances in Algae. 3. Quantitative Determination of Acrylic Acid in Sea Algae	13	6.32

Seasonal Variations in the Cyanophils and the Gonadotropic Potency of the Pituitary in Relation to Gonadal Activity in the Catfish, Mystus vittatus — 15 — 9.13

BOOKS
SOS/70 Proceedings -- Now Available — 5 — 0.6
Book Chat — 15 — 9.16
'Progress in Organic Coatings' — 24 — 9.6
BYPRODUCTS FOR FOOD
Fish Waste Recovery (pat.) — 25 — 6.54
The Potential, the Problems, and the Status of Using Proteins of Aquatic Origin as Human Food — 25 — 6.54
CANNED FISH -- PROCESSING
Improvements in or Relating to the Preparation of Sterilized Slurries (pat.) — 10 — 3.336
CANNING
Improvements in or Relating to Can Sterilising (pat.) — 10 — 3.336
CHEMISTRY
The Amino Acid Sequence Around Four Cysteine Residues in Trout Actin — 2 — 0.322
CHEMISTRY, ORGANIC
Molecular Weight of the Photoprotein Aequorin — 2 — 0.32
COMPOSITION, INORGANIC
Trace Elements in Food. I. Zinc, II. Cobalt — 6 — 0.7
COMPOSITION, ORGANIC
Isovaleroyl Triglycerides From the Blubber and Melon Oils of the Beluga Whale (Delphinapterus leucas) — 9 — 4.14
The Lipid Composition of the Blood of Marine Mammals--II. Atlantic Bottlenose Dolphins, Tursiops truncatus and Two Species of Seals, Halichoerus grypus and Phoca vitulina — 10 — 4.14
A Compilation of Amino Acid Analyses of Proteins. I. — 14 — 8.51
Observations on the Chemical Composition and Toxicity of Ratfish (Chimaera monstrosa) — 15 — 8.
[Study of the Different Nitrogenous Components of Salmonidae: Proteins, Non-Protein Nitrogen, Nucleic Acids. Variation Factors] — 15 — 8.51
Determination and Composition of Fish Extracts — 16 — 8.50
Tables for the Identification of Carotenoid Pigments — 16 — 8.59
DRIED FISH -- PROCESSING
Fish Meal (pat.) — 9 — 3.63
ECOLOGY
Regenerative Functions and Microbial Ecology of Coral Reefs
I. Assays for Microbial Population — 17 — 9.19
II. Oxygen Metabolism in the Regenerative System — 18 — 9.19
ECONOMICS
Marine Decisions Under Uncertainty — 19 — 9.2
Some Economic Aspects of Pink Shrimp Farming in Florida — 20 — 9.2
ENVIRONMENT
Residuals--Environmental Quality Management: A Framework for Policy Analysis — 20 — 9.3
ENZYMES
Action Mechanism of Fish Gastric Hyaluronidase — 1 — 0.38
A Comparative Investigation of the Tissue Proteinases From the Liver of Various Species of Vertebrates Including Man — 1 — 0.38
An Alkaline Phosphatase in the Clam Meretrix lusoria (Gmelin), With Affinities for Nucleotides — 2 — 0.38
EQUIPMENT, PLANT
Ultrafiltration — 2 — 0.116
FACTORYSHIPS
Fishing and Modern Storage Processes for Sea Products — 6 — 2.118
FISH MEAL AND SOLUBLES -- NUTRITIVE VALUE
Poultry Research -- Concentrate Studies — 11 — 6.193
Poultry Research -- Norwegian Layer Diets — 11 — 6.193
Hydrolyzed-Feather Flour as a Protein Additive in Swine Feeding — 11 — 6.195
Influence of the Quality of Raw Materials on the Content of Folic Acid in Fish Meal — 12 — 6.194
FISHERY TECHNOLOGY
Review of the Fisheries Research Board of Canada 1969-1970 — 3 — 0.6
FOOD TECHNOLOGY
Producing Proteins by Fermentation (pat.) — 3 — 0.6
Production of Tender Beef — 4 — 0.6
Sterilization Process (pat.) — 5 — 0.6
FORECASTING, TECHNOLOGICAL
Forecasting Scientific and Technical Progress — 21 — 9.3

PICKLED FISH
Cuttlefish Processing (pat.) — 9 — 3.8
PLANTS, AQUATIC
Periodate Oxidation of the Insoluble Residue After Severe Extraction of Some Marine Algae — 12 — 6.32
PLANTS, AQUATIC -- ANALYSIS
Antimicrobial Substances in Algae. 3. Quantitative Determination of Acrylic Acid in Sea Algae — 13 — 6.32
PLANTS, AQUATIC -- COMPOSITION
Chemical Constituents of Australian Bull Kelp, Durvillea potatorum — 12 — 6.32
Seasonal Variations in the Content of Individual Tocopherols in Ascophyllum nodosum, Pelvetia canaliculata, and Fucus serratus — 12 — 6.32
PLANTS, AQUATIC -- PRODUCTS
Extraction of Agarose and Agaropectin From Indian Seaweeds — 11 — 6.33
Mucilaginous Substances of Red Seaweeds (Rhodophyceae). XVII. Electrophoretic Behavior of Red Seaweed Mucilage — 12 — 6.32
Tangle Product (pat.) — 13 — 6.37
Tangle Product (pat.) — 13 — 6.37
POLLUTANTS -- DISTRIBUTION
Mercury in the Environment: A Summary of Information Pertinent to the Distribution of Mercury in the Southern California Bight — 17 — 9.19
POLLUTANTS -- EFFECTS ON FLORA AND FAUNA
Eggshell Thinning in Japanese Quail Fed Mercuric Chloride — 17 — 9.19
POLLUTION
Estuarine Pollution: The Deterioration of the Oyster Industry in North Carolina — 17 — 9.19
The Nation's Rivers — 17 — 9.19
Distribution of Reduced Inorganic Compounds and Their Oxidation in Lakes — 18 — 9.19
Eutrophication and Detergent Phosphate — 18 — 9.19
Eutrophication of Lake Water Microcosms: Phosphate Versus Nonphosphate Detergents — 18 — 9.19
Influence of Pesticides on Water and the Human Environment — 18 — 9.19
Polluted Water--A Challenge to Forensic Biology — 19 — 9.19
Detergent Situation in Environmental Hygiene — 22 — 9.19
Algal Cancer and Causal Substances in Wastes From the Coal Chemical Industry — 25 — 9.19
POLLUTION -- ABATEMENT
Treatment of Waste Waters From Fish and Meat Processing Plants — 18 — 9.19
POLLUTION -- ECONOMICS
Pollution Prices in a General Equilibrium Model — 19 — 9.2
Solid Residual Management: Some Economic Considerations — 20 — 9.2
Pollution Control: Why Not Cost Allocation — 24 — 9.3
PRESERVATIVES
Interaction of Preservatives With Cetomacrogol — 7 — 3.11
Sea-Food Preservation (pat.) — 8 — 3.11
PRESERVATION -- IRRADIATION
Sterilization Process (pat.) — 7 — 3.15
Hygienic Studies on Laver of Korea. II. The Effects of ^{60}Co-Ray Irradiation on the Deformation of Vitamin C, Its Bactericidal Activity in Purple Laver — 11 — 6.39
PUBLIC ADMINISTRATION
Enforcing Environmental Policy: The Environmental Ombudsman — 21 — 9.3
The American Legal System and Environmental Pollution — 22 — 9.3
State Power and the Indian Treaty Right To Fish — 22 — 9.3
QUALITY CONTROL
Edible Oil Evaluation by Room Odor Tests: A Preliminary Report — 10 — 4.11
Analytical Evaluation of Food Quality — 25 — 7.8
REGULATIONS
Registration of Herbicides for Aquatic Use — 22 — 9.3
SALMON
Further Studies of Alaska Sockeye Salmon — 23 — 9.6
SANITATION
Conveyor Sterilization (pat.) — 8 — 3.18
SPOILAGE
The Microbiology of Fish and Fishery Products -- A Progress Report — 6 — 2.01
SUBMERSIBLES
Manned Mobile Submersible (pat.) — 5 — 2.145
TOXICOLOGY
Problems of Toxicants in Marine Food Products. 1. Marine Biotoxins — 8 — 2.9
Two Toxins From a Poisonous Sample of Mussels Mytilus edulis — 8 — 2.9
TRANSPORTATION
Container Traffic in Relation to Imported Food — 9 — 3.2387
Food in the Through Transport System — 9 — 3.2387
VESSELS, FISHING -- CORROSION AND FOULING
Antifouling Paints (pat.) — 6 — 2.113

Author	Page	Code
Aboul-Saad, Wissam G.	2	0.35
Ackman, R. G.	9	4.14
Aepli, O. T.	8	3.18
Akahane, Tooru	12	6.32
Akyüz, E. F. (ed.)	23	9.6
Allaway, William H.	14	7.42
Amundson, C. H.	1	0.34
Anderson, Judy L.	17	9.19
Anderson, Lee G.	20	9.2
Aschenbrenner, Peter J.	22	9.3
Astakhova, R. N.	8	3.2386
Bach, R.	5	2.05
Bache, Carl A.	17	9.19
Bagnis, R.	8	2.9
Baltes, Werner	16	8.50
Bridgen, John	2	0.322
Burgner, Robert L. (ed.)	23	9.6
Cary, Earle E.	14	7.42
Castell, Charles H.	10	4.5
Cho, Hyun Young	11	6.39
Cohn, M.	12	4.5
Coon, John M. (pat.)	5	2.145
Cowan, J. C.	10	4.11
Crepey, J. R.	6	2.118
Cummings, J. C.	22	9.3
Davis, Gilbert Thomas	22	9.3
Devanney, John W., III	19	9.2
Dillard, C. J.	11	4.5
Di Salvio, Louis H.	17	9.19
Doshi, Y. A.	11	6.33
Dutton, H. J.	10	4.11
Eaton, C. A.	9	4.14
Ege, Karl J.	21	9.3
Eklund, M. W.	2	0.5
Elias, Hans	13	7.0
Evans, C. D.	10	4.11
Evans, M. H.	8	2.9
Evans, William E.	5	2.145
Fan, Tsai-Yi	13	7.590
Firfarova, K. F.	1	0.38
Foppen, Fredrik K.	16	8.59
Ford, J. E.	3	0.7
Fukimbara, Takashi	4	0.5
Garvin, D. F.	8	3.18
Gerstle, Margaret Lynch	22	9.3
Gillespie, Samuel M.	19	9.2
--	20	9.2
Glombitza, Karl W.	13	6.32
Gregory, Jon Layne	20	9.2
Gundersen, K.	17	9.19
Gundersen, Kaare R.	16	9.14
Gutenmann, Walter H.	17	9.19
Hadeishi, T.	14	7.42
Hardy, R.	15	8.
Hardy, Roy	9	4.60
Hare, P. E.	1	0.322
Heidelbaugh, N. D.	12	4.5
Heighway, Arthur J.	15	9.16
Hickey, Frank David	6	2.3
Himel, Chester M.	2	0.35
Huslin, Stanley C. (pat.)	16	9.16
Ikeda, Hiroshi	6	2.113
Ishio, S.	25	9.19
Jensen, Arne	12	6.32
Johnson, F. H.	2	0.32
Jolliff, James V.	25	0.8
Joseph, R. L.	4	0.6
Juergensmeyer, Julian Conrad	22	9.3
Kaimal, P. N. R.	7	3.234
Karel, M.	12	4.5
Katsuura, Kakuji	12	6.32
Kazakova, O. V.	1	0.38
Kazmi, S. J. A.	7	3.11
Kim, Kwang Ho	11	6.39
Kirschenbaum, Donald M.	14	8.51
Kitamikado, Manabu	1	0.38
Knetemann, A.	5	0.6
Knight, H. Gary	21	9.3
Kohama, Y.	2	0.32
Kurakov, I. G.	21	9.3
Kwoh, Theresa Liu	10	4.5
Labuza, T. P.	12	4.5
Laylin, John G.	22	9.3
Lelieveld, H. L. M.	5	0.6
Lisk, Donald J.	17	9.19
List, G. R.	10	4.11
Litchfield, Carter	9	4.14
Loomis, Stephen M.	19	9.2
Loucks, Daniel P.	20	9.3
Love, Jane D.	9	4.5
Lunde, Gulbrand	10	4.11
Lunder, T. L.	13	7.0
Lunn, H. P.	9	3.2387
Luquet, P.	15	8.51
Mackie, P. R.	15	8.
Madgwick, John C.	12	6.32
Marshall, R. T.	2	0.5
Marshall, Robert Swinburn	6	2.3
McDonald, D. P.	2	0.116
McDougall, J.	8	3.2382
McKinley, Larry E.	5	2.145
McLaughlin, R. D.	14	7.42
McMillan, David C.	7	3.15
Metwally, M. M. E.	1	0.34
Mitchell, A. G.	7	3.11
Mitchell, Dee	18	9.19
Mommsen-Straub, S.	6	0.7
Moon, Travis W.	17	9.19
Morita, Richard Y.	4	0.5
Moser, Helen A.	10	4.11
Muys, G. T.	5	0.6
Nakagawa, H.	25	9.19
Nelson, Gary J.	10	4.14
Nikaido, Motomu	18	9.19
Novelli, Rose Mary E.	3	0.5
Ōba, Kenkichi	18	9.19
--	22	9.19
Ogura, Junj	6	2.113
Orekhovich, V. N.	1	0.38
Orlov, Yu. N.	8	3.2386
Owen, T. G.	15	9.13
Pardo, Arvid	21	9.3
Pariser, E. R.	25	6.54
Park, Dae Sung	11	6.39
Paul, Kala L.	4	0.5
Pearce, T. W.	13	7.86
Pearson, A. M.	9	4.5
Petit, M.	10	3.336
Potter, L. M.	11	6.193
Powell, E. O.	13	7.86
Poysky, F. T.	2	0.5
Ralph, Bernhard J.	12	6.32
Rao, P. Srinivasa	11	6.33
Reed, S. M.	2	0.5
Reymond, Dominique	25	7.8
Richardson, T.	1	0.34
Ruff, Larry E.	19	9.2
Ryu, Bong Suk	16	9.16
Rzhavskaya, F. M.	10	4.21
Salomon, A. (pat.)	9	3.63
Santa-Pinter, J. J.	24	9.3
Sarti, Domenico M.	11	6.195
Schjolberg, E. (pat.)	7	3.237
Schlettwein-Gsell, D.	6	0.7
Schneider, E.	5	2.06
Semple, A. B.	9	3.2387
Seshadri, Raja	4	0.5
Shears, H. E.	14	6.54
Shewan, J. M.	6	2.01
Shimomura, O.	2	0.32
Shore, D. T.	10	3.336
Shorrock, C.	3	0.7
Sieburth, John M.	4	0.5
Silver, M.	12	4.5
Singh, T. P.	15	9.13
Sipos, J. C.	9	4.14
Smith, C. A.	2	0.5
Solberg, J.	11	6.193
Spofford, Walter O., Jr.	20	9.2
Stangenberg, Marian	18	9.19
Stoewsand, Gilbert S.	17	9.19
Strange, R. E.	13	7.86
Sturm, Rolland G. (pat.)	5	2.145
Swartz, William E.	7	2.3
Tabb, Durbin C.	20	9.2
Takano, Hideaki	16	9.16
Tanaka, K.	3	0.6
Tannenbaum, Steven R.	13	7.590
Tappel, A. L.	11	4.5
Thomas, G.	10	3.336
Tomit , T. (pat.)	25	6.54
Tomiyama, Shinichi	18	9.19
--	22	9.19
Townsend, Ray T.	5	2.3
Trott, William M.	17	9.19
Tsuchiya, Hikogi	18	9.19
Tsugi, Norihiro	4	0.5
Twedt, Robert M.	3	0.5
Ueyama, Hideo	4	0.5
Uk, Solang	2	0.35
Umemori-Aikawa, Yoko	2	0.38
Van Rhee, R.	5	0.6
Vengerova, N. V.	10	4.21
Vernon, E.	6	2.05
Volkov, S. S.	8	3.2386
Walters, C. L.	14	7.599
Wehmiller, John	1	0.322
Wenzel, S.	5	2.05
White, J.	14	6.54
Whitman, P. A.	2	0.5
Wiggs, A. J.	15	9.13
Wilber, Charles G.	19	9.19
Willis, Elmer Dryden	7	2.3
Witas, Tadeusz	12	6.194
Wolman, M. Gordon	17	9.19
Woodruff, M. G., III	24	9.3
Wulf, Norman A.	22	9.3
Yamaguchi, K.	3	0.6
Yamauchi, Yoshihito	4	0.5
Yamamoto, Hiroshi	1	0.38
Yamamoto, M.	3	0.6
Yamazaki, Kunio	3	0.5
Yano, T.	25	9.19
Yates, George Talmadge, III	21	9.3
Yokoo, Makoto	6	2.113
Young, David R.	17	9.19
Young, E. Gordon	12	6.32
Zen-Yoji, H.	6	2.05

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